ENGINEERING NEWS-RECORD

D. B. Steinman: What measure for this man? p.57

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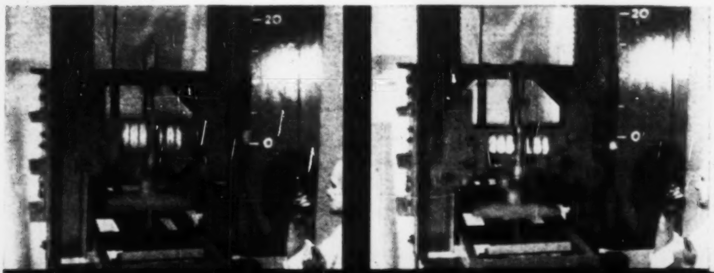

The split second before the guillotine strikes conventional belting a 5,300 in.-lb. blow

The moment of impact — a 10,600 in.-lb. blow crashes into the HDNF sample

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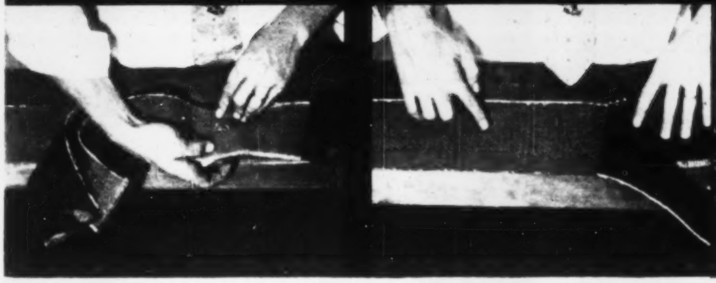
Result: not even a mark on the sample of HDNF



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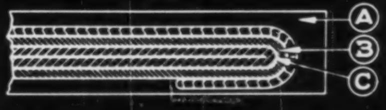

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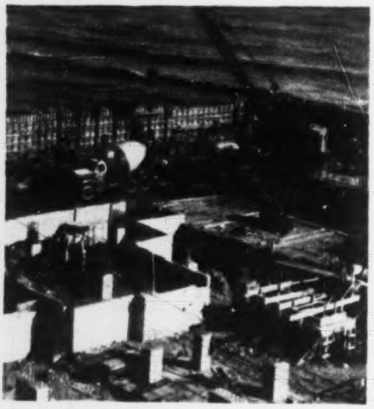

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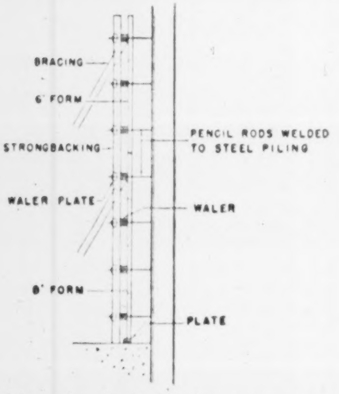

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ENGINEERING NEWS-RECORD, Vol. 162, No. 25, JUNE 25, 1959

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. **Publication Office**, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, President, Publications Division; Shelton Fisher, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U. S. A. Title registered in U.S. Patent Office. © Copyright 1959 McGraw-Hill Publishing Co., Inc. All Rights Reserved.

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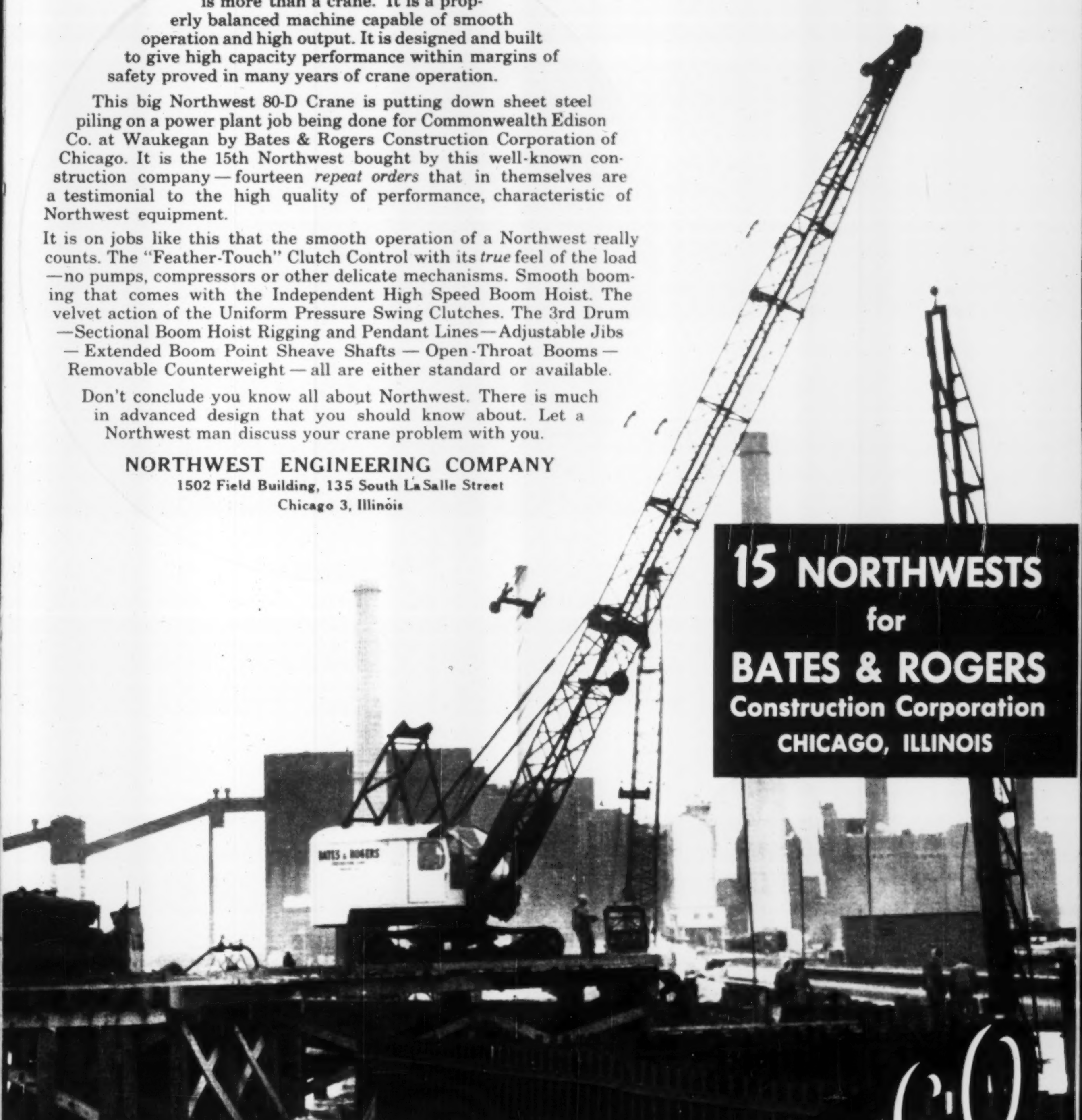

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Every move is an exciting demonstration of performance that writes a new set of ground rules for what a ¾-yd. shovel-crane should do! The all-new engineered LS-78 has the look and feel of stamina and strength. And it's out to let you know it with perfect balance of power, weight, speed and control. Precision-built, fully convertible, attractively priced . . . the bold new LS-78 creates dozens of *new ways* to widen your profit margins!

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6 truck-cranes
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protect concrete structures from disintegration

CLAY LINER PLATES ARE UNAFFECTED BY EROSION, ABRASION OR CORROSIVE ACIDS OR GASES

For complete protection of concrete pipe sewers, industrial sewers, acid vats, sewage treatment tanks, neutralizing baths, culverts, retaining walls, and bridges use Amvit clay liner plates for these five big reasons:

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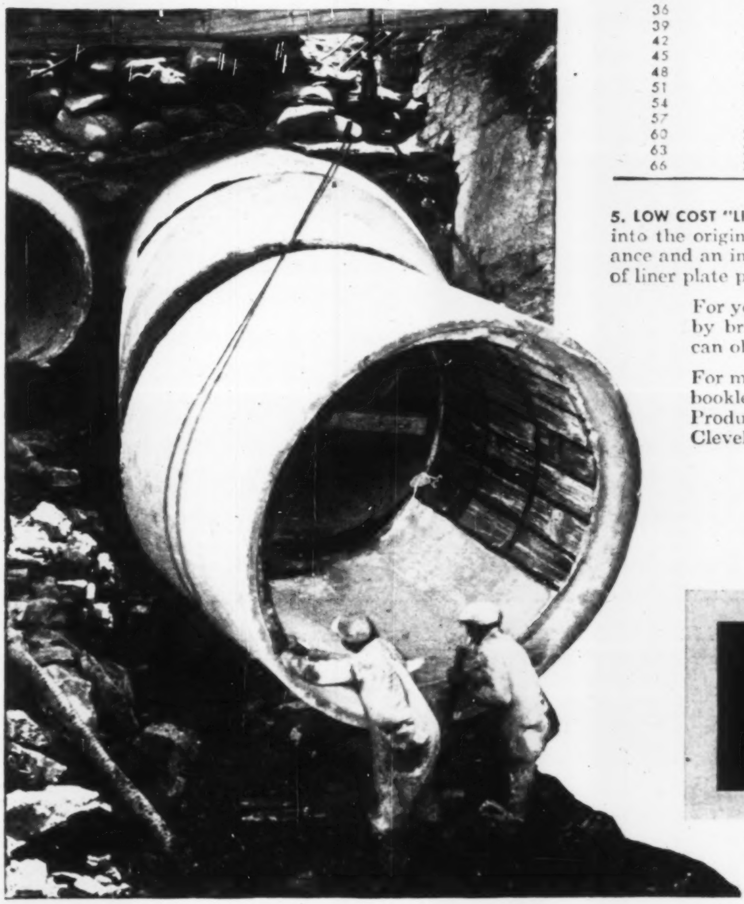
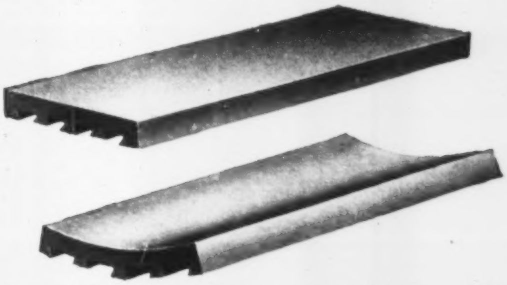
3. EASY INSTALLATION — Amvit Clay Liner Plates, hardened, glazed, and durable, permanently bond and lock to masonry and concrete work. They are easily installed on concrete forms and are sized according to standardized specifications for uniform spacing.





4. SIZES FOR EVERY JOB — To meet the applications of liner plates in industry, sewerage, and drainage, they are manufactured flat or curved, in 24-inch lengths, 9 inches wide. Lengths under 24 inches for special applications are available on request.

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Diameter Sewer	Pieces Required For Circle	Radius	Diameter Sewer	Pieces Required For Circle	Radius
Inches	Number	Inches	Inches	Number	Inches
24	8	12	69	23	33
27	9	13½	72	24	33
30	10	16½	78	26	45
33	11	16½	84	28	45
36	12	18	90	30	45
39	13	21	96	32	45
42	14	21	102	34	45
45	15	21	108	36	60
48	16	24	114	38	60
51	17	26¼	120	40	60
54	18	26¼	126	42	60
57	19	26¼	132	44	60
60	20	33	138	46	60
63	21	33	144	48	72
66	22	33			

5. LOW COST "LIFE INSURANCE" — Building Amvit Liner Plates into the original structure assures a reduction in maintenance and an increase in life expectancy far beyond the cost of liner plate protection.

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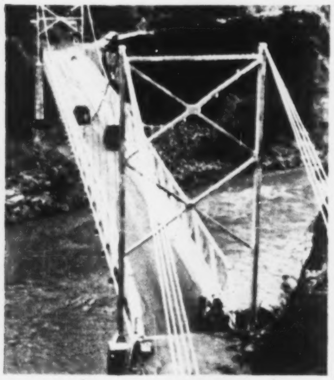
The recently completed Glen Canyon Bridge in Arizona is the world's highest (750 ft.) arch bridge. Completely fabricated and assembled at Yuba's Judson Pacific-Murphy plant, this structure used 4,000 tons of steel, was erected ahead of schedule.

or

CREEK SIZE



The Hawkins Bar Bridge lies in a remote mountain area, 8 miles east of Willow Creek in California. Chances are you'll never see it. But it typifies the smaller bridges that have contributed to Yuba's widely recognized leadership in bridge building at its best.

Design • Fabrication • Erection

Yuba specializes in bridges. Witness three typical jobs, shown here—bridges of all types and sizes—the routine and the one-job-in-a-thousand. Regardless of the complexities, Yuba serves you well: with its long experience and high skills required for this exacting work; through all phases of engineering, steel fabrication and erection; from large and well-equipped plants located nationwide; and with a know-how that finds ways to lower costs and make records in ahead-of-time completions. We'll welcome the opportunity of talking with you. Just write, wire or call.

YUBA designs and builds a wide range of equipment for engineered construction:

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Reader Comment

How to 'Sell' Civil Engineering

Sir—I read with considerable interest the editorial, "Civil Engineering's Place" (ENR May 7, p. 116). I am a university teacher and very much concerned with the subject.

The editorial states quite accurately that there is a swing away from civil engineering to other branches of engineering such as electrical, mechanical and chemical. I would include in this list aeronautical engineering, but would delete mechanical engineering. At Princeton University and some other prominent engineering schools, mechanical engineering is having almost as much difficulty as civil engineering in attracting students.

As an explanation of this phenomena, I think it is safe to say that aeronautical, chemical and electrical engineering have a certain amount of glamor at the present time to which civil and mechanical engineering cannot ascribe. What is still worse, as far as I am concerned, is that for the most part the more brillant students are going into the more glamorous fields while civil engineering is getting the academically weaker students. This does not bode well for civil engineering in the future.

Civil engineering educators are accused in the editorial of accepting apathetically this trend. In a large measure, that is true. The solution you recommend, however, is pointing with pride to the construction industry in all its glory. I wish I could agree with the editorial, but I am afraid I cannot, at least as far as the situation at the moment is concerned.

Several weeks ago, the construction industry as represented by the Education Committee of the Moles had a buffet supper at the Biltmore Hotel. The avowed purpose of this meeting was to acquaint civil engineering students in the Metropolitan New York area with the opportunities in the construction industry. A number of items mentioned at the meeting stand out as intimately related to the editorial concept of the construction industry.

First, the starting salary is low compared to other employment opportunities. I know of graduating seniors being offered as much as 50% more starting salary than was mentioned by the panelists as customary in the construction industry.

Second, several of the panelists said that they would like to feel that the graduate really wanted to be in the construction industry and as a result they expected him to come to them and sell his services. In this day of highly competitive recruitment of engineering graduates, the current approach of the construction industry to the new graduate, both as to salary and availability, is one which an educator has difficulty in selling to the students.

Further along this line, I get the distinct feeling that construction industry executives instinctively feel that graduates from the civil engineering program are a desirable thing. At the same time, however, I do not believe that they can verbalize in any way why this is uniquely so. If they honestly believe that a civil engineering graduate has something to offer them that could not be gotten from a technician or maybe an eager laborer, they most certainly should be in the college recruiting world just as are duPont, Boeing and all the rest.

In addition, I might mention the embarrassment of the Moles panelists whenever any student asked about the advantage to the construction industry of a civil engineering graduate with a Master's degree. They are not the least bit encouraging on this point.

If you will pardon the personal reference, my first five years out of college were spent with Proctor and Gamble, and I remember very well a young chap who had a Ph.D. in electrical engineering. He became at a relatively young age a vice president in charge of manufacturing in this soap and oils processing and packaging industry. Procter and Gamble hired that man for his superbly trained mind and they more than got their money's worth.

The construction industry has not yet honestly seen the advantages of a finely trained mind. They are committed to a policy of paying hacker's wages to college graduates and they are getting merely hackers as a result.

No, the example of the construction industry is not a viable one. What else can be offered to the educators as a means of inducing students into civil engineering? I would frankly like to know. In terms of our cultural pattern, you cannot force students into civil engineering. That is left to the totalitarian regimes. We in civil engineering have a tough job on our hands. We have got to sell civil engineering, but how? The country most certainly must have civil engineers. The present pattern must somehow be changed.

One related comment in this connection which I would like to make is that at the present time, the students are being attracted to glamorous forms

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

4-D

WROUGHT IRON RADIANT HEATING SYSTEMS whip corrosion, cut heating costs

WHERE TO USE IT:

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- toll houses
- administration buildings
- commercial buildings
- aircraft hangars
- garages
- lobbies
- locker rooms

WHY 4-D WROUGHT IRON?

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- lowest cost per year of service

Write for technical data on specific applications

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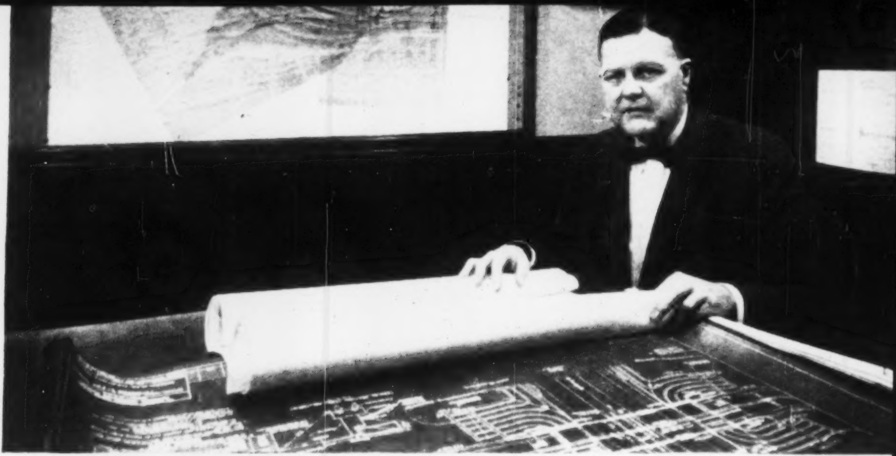
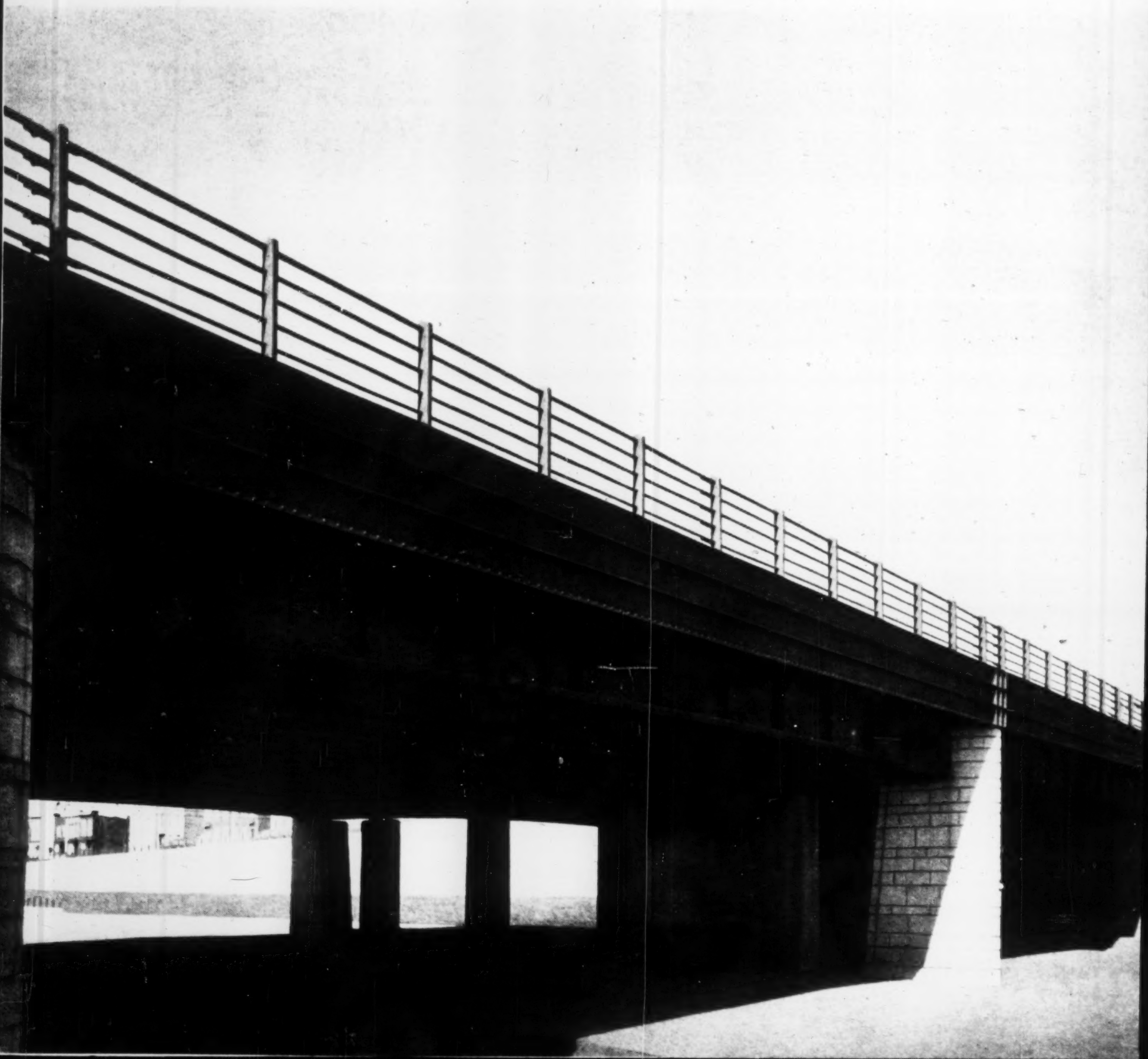
ROADS
ON THE GO



Mr. Maurice N. Quade, Senior Partner of Parsons, Brinckerhoff, Hall & Macdonald, designers of about 50 steel bridges a year.

One of the handsome steel bridges on the Prospect Avenue Expressway, Brooklyn, N.Y., designed by Parsons, Brinckerhoff Hall & Macdonald.



Steel is a predominant structural material in short-span bridge work

at Parsons, Brinckerhoff, Hall and Macdonald, Consulting Engineers.

PARSONS, BRINCKERHOFF, HALL & MACDONALD will celebrate their 75th anniversary next year as consulting engineers in the civil engineering field. The scope of their work in the western hemisphere includes highways, bridges, tunnels, municipal and sanitary work, airports, river and harbor work, etc. In the highway field they designed between 50 and 60 short-span bridges in 1958, using rolled steel beams. Currently they have about 50 more on the boards.

Some of the projects include parts of the Bergen-Passiac Counties Interstate Expressway in New Jersey; the Prospect Avenue Expressway in Brooklyn, N.Y.; the Queen Elizabeth Way Connections in Hamilton, Ontario, Canada; the New York State Thruway; Northeast Expressway, Massachussets.

Steel is an economical material

Mr. M. N. Quade, Senior Partner of the firm, says that the majority of short-span designs on their drawing boards are composite beam construction, utilizing concrete decks. Combining steel beams with concrete makes it possible to save construction costs. Steel construction goes up fast and saves time and labor. The factors of economy, quick erection and availability all contribute to the fact that steel is a predominant material used in short-span bridge projects.

Increased facilities. There is an ever-expanding demand for steel because of its many advantages in the fast-growing market for bridge construction. The steel industry has had the foresight to grow with this vigorous market through greatly expanded facilities for manufacture of structural shapes and plates. You can confidently design in steel—the material you know best, the material that offers most—knowing it will be available.

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United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

Quick erection, low cost, composite beam construction, reduction in traffic delays are a few reasons why structural steel is the predominant material for bridges.

Mr. Quade (left) shown with a new electronic computer system which his company uses to speed up engineering work in composite beam design and in figuring large projects.

4-D

WROUGHT IRON
IN BUILDING PIPING
provides lowest cost
per year of service

WHERE TO USE IT:

- soil lines
- waste lines
- vent piping
- downspouts
- steam supply lines
- steam condensate returns
- electrical conduit
- hot and cold water lines
- underground lines
- cooling tower piping
- radiant heating systems
- snow melting systems
- sprinkler systems
- air conditioning systems
- refrigeration

Write for technical data on specific applications

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Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.

of engineering, and are being catered to in these fields. Is this not perhaps an indication of a young, immature culture which fails to recognize the merit of less glamorous fields? It is nice to do the glamorous thing, but every once in a while the non-glamorous needs to be done. Partying is fine, but every once in a while hard work has to be done nevertheless.

Flying off into space, solving complex equations in split seconds, and watching the wonders of nuclear reactors are all fine, but somebody has to take care of the more routine and mundane problems in which the civil engineer is ordinarily engaged.

There needs to be developed at this time, it seems to me, a sound philosophy which realizes the importance and necessity of each and every branch of engineering for the maximum achievement of our national potential. If ENGINEERING NEWS-RECORD could stimulate such a study or investigation, either through Engineers' Joint Council for Professional Development, a program of inestimable value to our country should most certainly develop.

SUMNER B. IRISH
Associate Professor
Department of Civil Engineering
Princeton University

Editor's Note: Professor Irish supports well ENR's contention that the construction industry must give educators the reasons they need to promote civil engineering as a field of study. Further, we like his final thought on the need to establish relative importance of the several branches of engineering. We hereby commend the idea to EJC and ECPD.

▶ It may be of interest to ENR readers to know that Air Force civil engineering is subdivided into Installations and Cartography Utilization. The Installations Utilization Field is further subdivided into Construction, Maintenance, Utilities and Planning. These specialty titles are descriptive of the duties and responsibilities of the engineer.

As you will note, the term "Installations" has not been completely eliminated.

Your editorial refers to the greater prestige and appeal of the title Civil Engineer as compared to Installations Engineer. Undoubtedly, this is true. The engineer desires public recognition and acceptance of his work, title and professional standing. The title Installations Engineer was understood only by those directly connected with the military organizations. The public had a vague (if any) understanding of the duties of an Installations Engineer. Now, at least, the Air Force engineer can be identified with civil engineering work.

In 1956, the qualification requirements for the Installations Utilization Field were changed. (In my opinion, this change increased prestige and appeal of an engineering career in the Air Force to a greater extent than the present title change.) Now, an officer must possess special knowledge in the particular engineering field (construction, maintenance, utilities, planning) and 30 months experience in installations activities. In addition, a B.S. degree in engineering is desirable.

Mandatory qualifications for the title of Base Engineer or Civil Engineering Staff, includes "full qualification as a Construction or Maintenance Engineer and additionally qualified in one of the other three lateral (specialties)"; 24 months' experience as Base Engineer and a B.S. degree in engineering or architecture.

These mandatory requirements have increased the attractiveness of an engineering career in the Air Force. At the same time, the person without engineering knowledge and experience is discouraged from entering the "Civil Engineering Career Area". This is as it should be. It is particularly important that the persons entrusted with determining when, where, and how public funds will be spent should be qualified beyond doubt. Strict and mandatory education and experience requirements are an insurance against inefficient expenditure of public funds. It is a step in the right direction.

EDWARD W. LINGEL
Base Engineer
Captain, USAF

Pump Idea Opposed

Sir—Because of an extended assignment out of the country, your news item, "California Aqueduct—Steam Pumps May Be Used for 2,165 ft Lift" (ENR Mar. 12, p. 23) has just come to my attention. As a consulting engineer in the general field of large-scale pumping and hydroelectric power and, more particularly, as a member of the Board of Consulting Engineers on Alternative Aqueduct Routes (Feather River Project), I am directly concerned with this problem, and therefore, feel obliged to offer my comments.

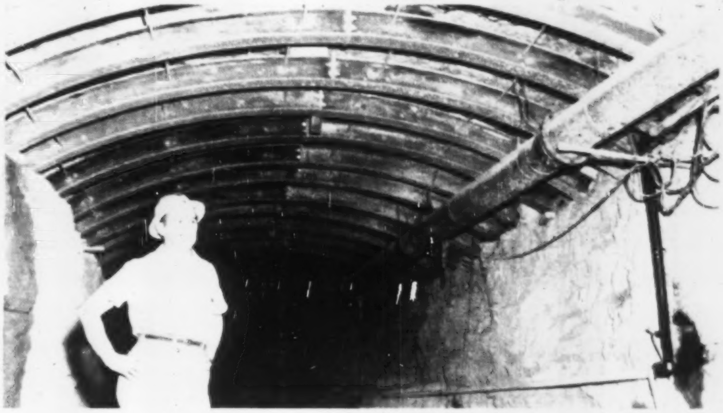
Since this particular subject has been treated as significant news the general inference for interested engineers and manufacturers, as well as for public officials and the taxpayers, could readily be that the pumping scheme, as described, has elements of superiority over alternative schemes which are not even mentioned. However, some of the basic factors worthy of additional consideration are:

- The Tehachapi Mountains crossing will call for the design of the world's largest pumping plants and equipment, well beyond anything undertaken heretofore. None but the best in engineering practice and dependable precedent is worthy of consideration in planning such a project.
- There are several alternative schemes under consideration involving the application of well established prin-

No damage to Tennessee's century-old Capitol while . . .

street-level tunnel is driven 242 ft. to center of subbasement.

Tunnel roof, precision-blasted 13 ft. below Capitol's basement . . .



supported by COMMERCIAL steel arch ribs spaced 3 ft. apart.

Safe Tunneling Beneath Tennessee Capitol

Only 242 ft. long but few contractors willing to risk it.

The PROBLEM: Extensive blasting just 13 ft. below the basement of the 100 year old Tennessee State House . . . without disturbing the venerable structure or the affairs of state going on as usual.

Typical SOLUTION for an unusual tunnel support problem: Call COMMERCIAL specialists to recommend a design based on their 35 years experience. COMMERCIAL'S recommended roof supports and a carefully planned, precisely controlled blasting technique speeded completion without personal injuries or destruction of historic properties. In fact, no appreciable vibration was recorded on the warning seismograph installed above. The tunnel was driven directly under the eight 280-ton Ionic columns of the main entrance to a point 34 ft. past the center line of the building.

The steel arch ribs designed and furnished by COMMERCIAL are in two segments . . . each just over 9 ft. long. A total of 80 arches rest in niches cut at the spring line . . . and spaced 3 ft. apart with ¾" tie rods. Where necessary, lagging between the ribs was used to support thinly-bedded limestone and clay.

Finished, the tunnel is 11 ft. wide and 10 ft. high. It eliminates the 106 step climb from the street to the legislative floor by permitting direct access to two new elevators in the subbasement of the hilltop building.

It's common practice for engineers and contractors to submit their unusual tunnel or shaft problems to COMMERCIAL. As tunnel support specialists, COMMERCIAL has developed engineering "know-how" and production techniques that permit faster, safer underground excavation at reduced cost.

For complete information, please write to Dept. E-26

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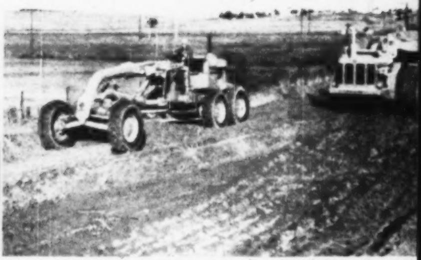
Mixing black-top in Idaho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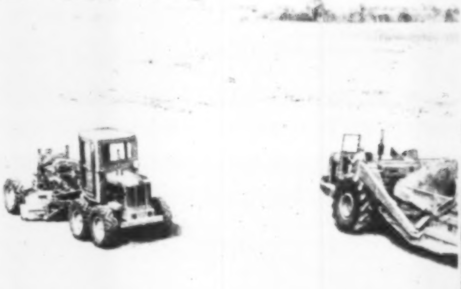

Maintaining a haul road in Illinois

Rough grading a turnpike in Texas

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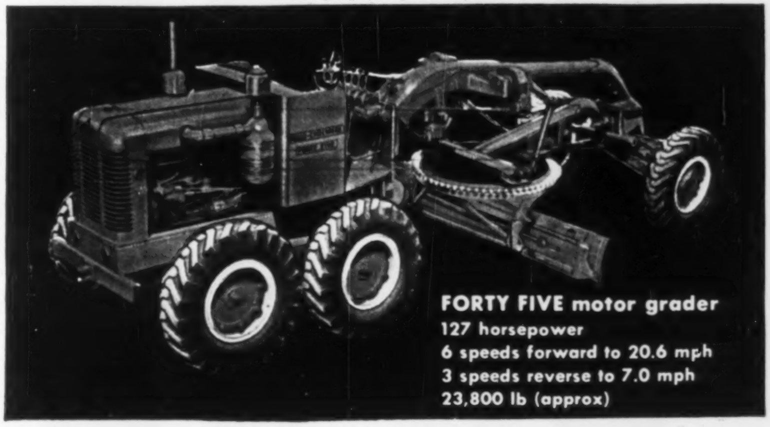

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23,800 lb (approx)

ALPHA BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

news and notes from the field

Overcoming the Problems of Hot Weather Concreting

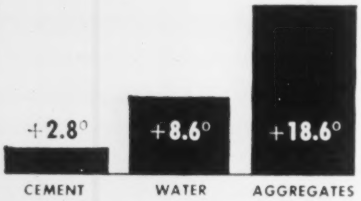
Hot weather can be made to work *for* you in concreting—if certain precautions are observed during placing. The dangers of inadequate preparation before placing, high MIX temperatures and poor curing protection should be understood and controlled.

Effects of High Temperatures

High temperature accelerates the setting time of concrete and promotes rapid evaporation of moisture. The setting time is based on mix and curing temperatures of 73 F. As the temperature rises the setting time accelerates. When the temperature of the concrete is allowed to climb too high, there is danger of "quick set" and permanent strength damage.

What causes High Concrete Temperatures?

The temperature of fresh concrete is affected by the temperature of the materials and the mixing conditions. Take an average five bag mix and increase the temperature of each ingredient 30°. The graph below shows how much each affects the concrete temperature.



What Happens When Temperature of Fresh Concrete Runs Too High

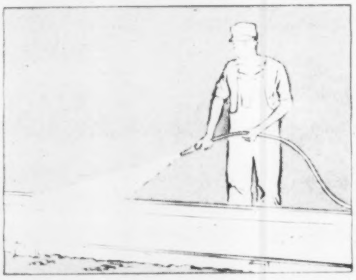
- **Permanent strength reduction**
- **Early stiffening or quick set**
- **Increased water requirements**
- **Increased probability of cracking**

More information on Hot Weather Concreting is available in Alpha's "Craftsmanship in Concrete" Folder #2. Free copies are available.

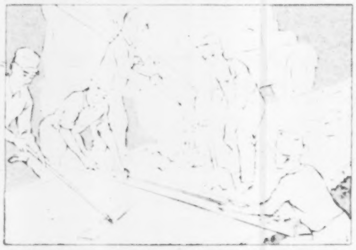
Ways of Reducing Mix Temperature:

1. Sprinkle hot aggregate stock piles with hose or fog spray.
2. Apply fog spray to aggregates or conveyor belts.
3. Use crushed ice in the mix replacing water—pound for pound.
4. Avoid stock-piling aggregates directly in the sun.
5. Protect mix-water storage and lines from direct sun.
6. Avoid the use of strength accelerators in hot weather.

Tips For Best Results



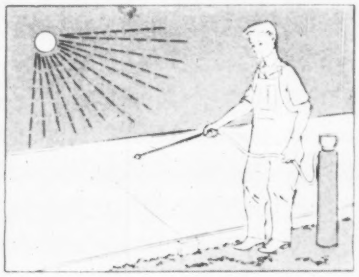
1. Subgrade should be damp (not muddy) so it will not absorb water from concrete.



2. Have adequate help available to handle concrete rapidly.

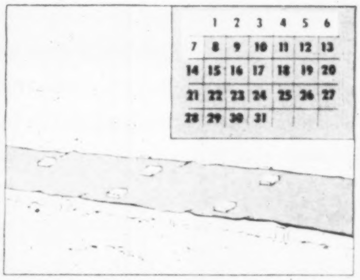
3. Discharge MIX as soon as possible after proper mixing.

4. In extremely hot weather it may be necessary to shade concrete or use wet coverings until final finishing can be completed.



5. In hot dry breeze erect wind break or use fog nozzles on upwind side of fresh concrete.

6. Start curing operations as soon as concrete has set enough to avoid surface damage.



7. Cure concrete for at least 7 days where durable wearing surface and strength are important.

8. Keep test cylinders shaded and damp until they are ready to be sent to laboratory after 24 hours.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building, Easton, Pa.

ciples of design and operation of electrically driven pumps. In my judgment these will offer a superior solution both in reliability of performance and, more importantly, in economy of operations, as compared with the scheme described in your journal. Other reports previously published on this question have already confirmed this point.

- There is no significant example of a steam-driven installation in existence today, even on a small scale, corresponding to ENR's description.
- No acceptable evidence has been submitted to our Board which might serve to demonstrate the feasibility and or economy of steam-driven pumps for this application.
- The presence of this scheme in the current studies has not been justified except to demonstrate that various alternatives are being considered in making comparative cost estimates.
- Previous developments in the field of large-scale pumping, especially in Europe, indicate that the choice of pumping and power recovery scheme, and its method of operation for maximum economy, will have a major influence on the location of the aqueduct route and on the staking of the project to minimize capital expenditures.
- It would be premature to discuss specific projects layouts, operating schemes, comparative costs and basic project economics, because no final report has been submitted to the Board of Consulting Engineers.

Adolph J. Ackerman
Consulting Engineer
Madison, Wis.

Louisville Expressways

Sir—In your article "Louisville Roads Get Go-Ahead," (ENR May 7, p. 32), you state: "Barstow, Mulligan & Vollmer, New York City consultants, have been engaged to draw preliminary plans for the Eastern Expressway."

This statement was incorrect. The firm of Arnold H. Vollmer Associates of New York City are the consultants retained by the Commonwealth of Kentucky to draw the preliminary plans for the Eastern Expressway as well as for the Western and Riverside Expressways and a minor portion of Interstate Route 71.

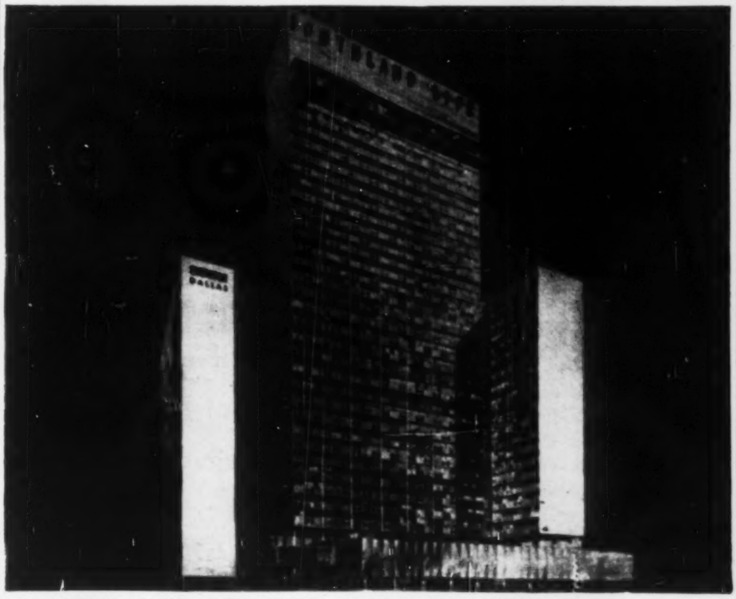
Arnold H. Vollmer
Arnold H. Vollmer Associates
New York, N. Y.

Pipe Jacking Record?

Sir—Every so often I read with interest articles in your magazine about jacking pipe. About two years ago we jacked a total of 1,500 lineal feet of 60-inch reinforced concrete pipe for sewers in Lewiston, Maine. The long run was 250 lineal feet. Is this a record?

R. W. Erickson
Samuel Aceto & Co.
Portland, Me.

ANOTHER JOB BY
STANDARD ROOFING CO.



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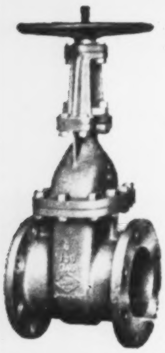


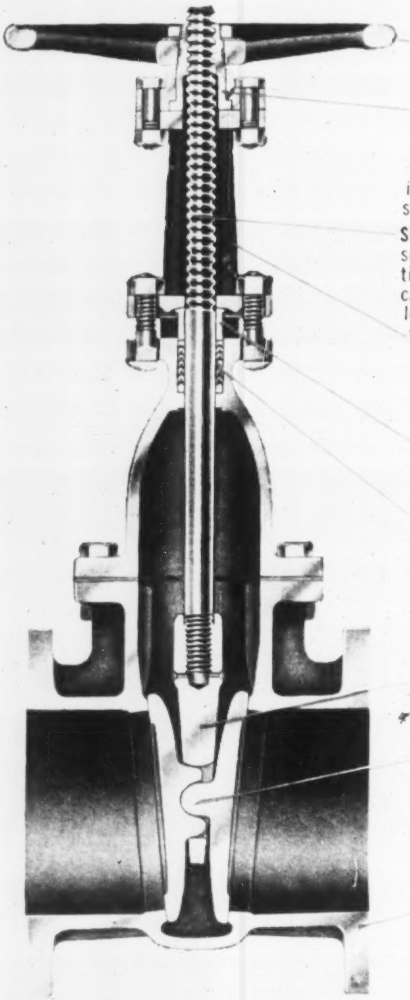
In this Split Wedge Gate you can see why it pays to

Specify JENKINS for STAINLESS STEEL Valves, too

This picture shows the many points of excellence in the design and construction of Jenkins Fig. 1327 Split Wedge Stainless Steel Gate Valves. Compare them with any valve you know. You'll conclude that it's hard to beat Jenkins at making valves, no matter what the material.

But no picture can show the quality of the castings . . . the precision machining . . . the rigid inspection and testing that have gone into this valve. All of these are as important as design and metal alloys in assuring long, dependable, economical valve service. And, all of them are up to the peak standards for which Jenkins has been known for almost a century.

SEND FOR NEW CATALOG of Jenkins Stainless Steel Valves. You'll find in it the patterns you want, in a choice of alloys that satisfy the requirements of practically all corrosive services. Also, you'll see that these Jenkins valves meet valve industry specifications and the high standards established by the leading users of stainless steel valves. Jenkins Bros., 100 Park Avenue, New York 17.



WHEEL of high strength malleable iron designed for firm grip and easy operation.

YOKE BUSHING, easily renewable. Made of bronze, for ideal thread engagement with stainless steel spindle, to prevent seizing or galling of spindle threads. Bushing of stainless steel is optional.

SPINDLE has long thread bearing surfaces with correct lead for easy, tight closing. Screws into wedge carrier, then secured by a stainless steel pin.

YOKE BONNET has liberal space between yoke arms for easy access to packing box. Precision machined flange face assures uniform contact with gasket for a tight body-bonnet joint.

GLAND consists of two pieces — gland flange and gland follower — eliminates binding of follower in case gland bolts are tightened unevenly.

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BODY — Through-port design for full, free flow. Ample wall thickness and good design provide extra strength to withstand stresses. End flanges conform to M.S.S. specs.

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ENGINEERING NEWS-RECORD

Vol. 162, No. 25 June 25, 1959

Number of copies printed this issue 85,004

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THE CONSTRUCTION WEEK

CONTRACTS YOU WON'T GET—Here's how changes in air defense policy will affect construction: The Air Force will cancel plans for two of 19 Bomarc bases authorized for fiscal 1959 and two or three of five bases scheduled for fiscal '60; the Army must kill plans for seven Nike-Hercules bases not yet out for contract. Congress is likely to force more cuts (ENR June 6, p. 26).

CHEAPER THAN A FIRE—It's going to cost Detroit $3.9 million to install sprinklers and alarms in old school buildings. The City Council has endorsed proposed building code amendments requiring the fire-safety measures. The action was prompted by the Chicago school fire (ENR Dec. 11, 1958, p. 22).

BIG QUARTER FOR HEAVY CONSTRUCTION—Heavy construction contracts during the second quarter just missed setting a new quarterly record. The $5.75 billion in contracts reported during April-June is only 0.8% under the record second quarter of 1958.

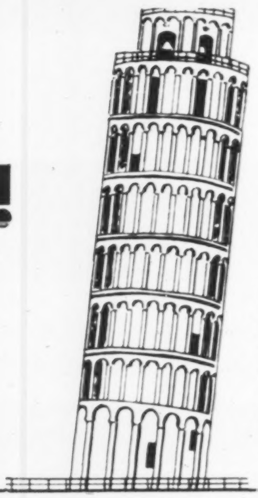
ANOTHER LOW, LOW BID—The contract for Sacramento's federal office building—last to be built under the old lease-purchase plan—went to Dinwiddie Construction Co. of San Francisco on a bid of $6.4 million—33% under the $9.6-million estimate. The lease-purchase plan had been getting such poor response generally that Congress last year substituted direct appropriations.

A LOT OF HOUSEWARMINGS—Three out of four homebuilders expect housing starts in the second half to equal or exceed the first six months of 1959, says the National Association of Home Builders. The 500 builders surveyed plan to increase starts by 42% over last year. Current contract awards back up the survey results, with May-June volume second only to record 1955 and 50% above last year.

DESALTING PROCESS PICKED—The Interior Department has selected the electrodialysis process for the third demonstration plant to be built under the $10-million saline water conversion program. The plant will be located either in the northern Great Plains or in the Southwest. It will convert 250,000 gallons of brackish water a day. The process uses an electric current to separate out the salt ions through one or more membranes (ENR July 31, 1958, p. 44).

ROADS TO EVERYWHERE—A bill authorizing 12,000 miles of freeways for California was signed into law last week by Gov. Edmund G. Brown. The system will cost $10.5 billion and take 20 years to build (ENR Sept. 11, 1958, p. 25). The network will eventually link all cities of 5,000 or more population, and carry 59% of total vehicle travel.

LOOK PA...
NO STEEL!



The Leaning Tower of Pisa (1350), one of the seven wonders of the world, is completely without steel! It is another outstanding example of Roman Arch Design.

NO-JOINT Concrete Pipe Employs Age-old Roman Arch Design Principle

Arch Design . . . the *newest, most modern* development in pipe design, is also the world's *oldest! Arch Design* NO-JOINT Concrete Pipes have counterparts that have served civilization for *thousands of years!* The oldest arch design sewers in the world in Rome and Athens are *non-reinforced* and are *still in use!* Arch design has also been in use for *thousands of years* for bridges, aqueducts and cathedrals.

These historic structures *prove* that a 100% perfectly bedded conduit *doesn't need steel!* In contrast, many good reinforced and steel conduits have *died prematurely* when not properly bedded.

If your soil conditions permit a NO-JOINT installation, (70% of soils do!) cast-in-place NO-JOINT Pipe can *save 15 to 20% in cost.* Further, extruded NO-JOINT Pipe, with a *load factor of 7,* has *never had a failure* from external loading in over *one million feet* of pipe in use under all types of conditions!

NO-JOINT Concrete Pipe is stronger, longer lasting, and more economical for storm sewers, outfall sewers, underground canals, culverts, wasteways or irrigation projects. You can have pipe lines with *rifle bore alignment* with *R. A. Hanson Automatic Grade Control!*

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GOVERNMENT OFFICIALS: Save taxpayers 15 to 20% on public works with NO-JOINT Pipe.

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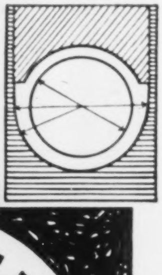

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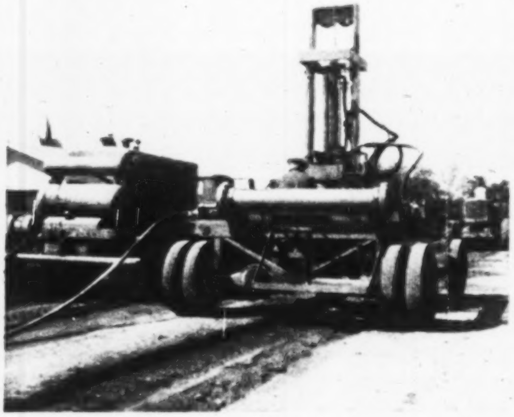

Backfilling 42 inch NO-JOINT line to 90% relative compaction with pneumatic tamper 10 days after pipe was extruded. Installation of 3000 ft. x 42 inch storm sewer in 15 ft. trench, for city of Yuba City, Calif., by Baldwin Contracting Co., Marysville.

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WASHINGTON OBSERVER

- **Housing: Still a 'budget buster'**
- **Airports: Spending plans grounded**
- **Road funds: Congress still waiting**

- **Congress has given President Eisenhower a housing bill that calls for more than he wanted in many of its programs—but not much more.** It would add only $24 million more than the President asked for the next fiscal year, and it is far less than the Senate and House originally passed.

But the bill backs many programs for which the President wanted nothing at all:

Public housing: Conferees agreed on 45,000 units; the Administration asked for none at all.

Urban renewal: Bill contains $900 million over a two-year period for capital grants for site preparation; Administration asked a lot less.

College housing: The bill calls for $300 million for low-interest loans; Administration wanted no new money—just limited federal guarantee of private loans. For the first time, the measure adds funds ($62.5 million) for college classrooms, an item not in the Administration's program.

Housing for elderly: The bill would authorize $50 million in direct loans; Administration asked nothing.

Co-op housing: Conferees agreed on $37.5 million to purchase mortgages; Administration asked nothing.

FHA insurance authority: The bill would add roughly $10 billion, provided the President signs it before July 1; if he signs the bill later, FHA would get only $5 billion.

President Eisenhower could sign such a bill in the opinion of Senator Homer Capehart (R., Ind.), a top GOP man on housing. But there's a lot of doubt since it obviously qualifies as a "budget buster" if he chooses to so label it.

- **President Eisenhower's veto threat kept the airport aid program down** in size. At the outset of this session the Democrats talked of quickly passing a $575-million program covering five years. Instead, the measure calls for a two-year continuation of the present grants of $63 million a year. The Administration wanted $65 million in fiscal 1960, tapering off by $10 million in each of the next three years.

- **The President is squeezing Congress on highway financing.** He is deeply disturbed about the way Congress is delaying action on his request to increase gasoline taxes by 1½ cents a gallon.

Congressmen are still moving in other directions: The Ways and Means Committee shows no sign of voting a gasoline tax increase. The President is against other proposals—such as out-and-out deficit financing, or allowing the trust fund to borrow from the Treasury, or allowing the trust fund to issue bonds on its own, or earmarking some new excise revenues to the trust fund.

Congressional strategy is to wait until the last minute, hoping to come up with something President Eisenhower will have to sign—or let the construction rate sag. Some states have already committed their existing allocations and badly need the full amounts that would be coming to them this summer (ENR May 14, p. 25).

US CONVEYOR BELTS

View of plant

"U. S." Belt conveying limestone rock

Console board from which the entire 10 "U.S." Belts of Quarry System are controlled

Lehigh Portland's Union Bridge plant Highly Conveyorized

This immense plant in Maryland has a capacity of 3-million barrels per year. To feed its huge, ever-hungry machinery, the crushed limestone, sandstone and shale are carried on an automatic conveying system, with rubber belting made by "U. S.".

The entire system is so trouble-free that one operator (plus an oiler-helper) controls a series of 10 of the "U.S." Belts from console board at the quarry.

The main belt in the system is a 5-ply CX U. S. Matchless,® 3560′ long on 1780′ centers, 36″ wide.

It carries 600 tons of raw limestone per hour, extends from the quarry to a transfer belt which runs to the storage building.

Coal and gypsum are brought nearly 500 feet to storage by one of the belts in another conveyor system. Being separate from the conveyor handling limestone; either gypsum or coal can be conveyed to storage at any time.

Massive as this Lehigh plant is, provision for expansion has been designed into the conveyor systems. The superior troughing and stamina of "U. S." Belts enable them to handle greater loads if capacity is increased.

The reliability of "U. S." Belts demonstrated in this plant is one reason why United States Rubber is the world's largest manufacturer of conveyor belts.

• • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.   In Canada: Dominion Rubber Company, Ltd.

Needed: 418,200 Classrooms

- **That's the number of schoolrooms the government says must be built in the next five years to keep up with growing needs.**
- **It will require increasing the rate of school construction. The current rate would leave us short by 68,000 classrooms.**
- **Financing is the big problem. Local school districts need help, but it's unlikely to come from the federal government.**

The rising schoolage population and the backlog of demand for schoolrooms guarantees that school construction needs will be heavy for at least the next five years.

A state-by-state survey, to be released by the government this week, shows that 418,200 classrooms must be built by the spring of 1964 to keep up with needs.

That would require an increase in the rate of construction. The current rate would leave an unsatisfied backlog of 68,000 classrooms in the spring of 1964—for elementary and secondary schools.

Many observers believe that unless the federal government steps in, the current building rate of 70,000 classrooms a year will slow down. Probably an equal number say that federal aid is not necessary.

The U. S. Office of Education estimates that the nation will be short 133,500 classrooms this September—not to provide an ideal classroom situation, but just to meet the standards that local school districts themselves describe as necessary. This generally means a ratio of 30 pupils per class in elementary schools and 25 in secondary.

The U. S. emerged from World War II with a serious shortage of schools. The building rate during the depression and the war had fallen to less than half of normal. Not until 1952 did the construction rate get back up to the level of the 1920s.

Against this shortage pressed the flood of veterans' babies. The schoolage population shot up from 28.5 million in 1945 to 41.8 million in 1958. Now the Bureau of the Census reports that the 5 to 17 group will increase another 21% by 1965 to a total of 48.8 million.

The 1964 estimate of needs is obtained by adding together each school district's own evaluation of its need (see next page). This means the standards vary a good bit. The U. S. Chamber of Commerce and others argue that these estimates are inflated, but the Administration has accepted them as the best working base for planning.

At an average cost of $40,000 per classroom (including the cost of the whole school plant and grounds), the new estimate means that $16.7 billion worth of construction will be needed between now and 1964.

But at the current rate of construction (70,000 rooms a year) only 350,000 rooms will be built, leaving a deficit of 68,000 in 1964. Looking ahead to the following five years, an additional 190,000—or more than 600,000 for the 10-year period—will be needed.

This needed construction would be divided about evenly between the elementary schools, where costs average $35,000 per room, and secondary schools, averaging $45,000 per room.

The population bulge will be hitting the high schools hardest, with enrollment jumping 28% by 1964, compared to 11% in the elementary schools. But since there are twice as many grades at the elementary level, the need for additional schoolrooms balances out.

The present rate of construction would gradually eat away at the backlog so that by 1969 the U. S. would finally be caught up.

But the likelihood of holding this rate is slim.

The Commissioner of Education, L. G. Derthick, is blunt about it. "We have come to the conclusion," he said, "that if the current rate of school construction is to be maintained, those states and school districts which are lagging in providing necessary construction must be stimulated and aided in finding a way to meet their needs."

Michigan, for instance, needed 11,117 classrooms last fall, but by September will have built only 4,500 while the need edges up.

Nationally, school construction this year is off uncomfortably from last year. There were 71,600 rooms built in the 1957-58 school year, but school districts expected to build only 68,440 this year and will probably not complete quite that many.

The experience of local school districts in raising money shows that new sources of income are increasingly difficult to come by. Real estate taxes—the biggest source for schools—are a rather inflexible source.

A survey by the National Education Association a year ago showed another roadblock—legal debt limits. Some states reported that the majority of school districts had hit their legal limits. In Florida, for instance, 70% had reached this mark, and in Alabama 80%. In many states 20 to 30% of the districts—often the most populous—were up against this barrier.

It's not as easy to determine whether voters are rebelling at the cost of education. The evidence seems contradictory.

In recent months, many local school budgets have been rejected. There are no consolidated figures available on the

Narrowing the Gap

Fall 1959

Classrooms available	1,285,907
Total needed	1,419,407
Shortage	133,500

Spring 1964

Classrooms available	1,551,000*
Total needed	1,619,000
Shortage	68,000

* At present rate of construction and abandonment.

Data: U. S. Office of Education, ENR estimates.

number, but in last November's election, voters approved school bond proposals at a higher rate (83.6%) than they did public works (70%). And in the first five months of this year, 80% of all school bonds were passed.

There is some evidence of increased difficulty in raising money at the local level. It shows up in the growing trend toward state participation in helping cover school construction costs.

Michigan and California, for instance, have set up state loan plans that give school districts the advantage of the state's greater revenue base. In New York State, the controller has suggested that the state place its credit standing behind local school bonds.

With local school districts and states often pressed to the limit of their ability to raise money, educators have looked increasingly to the federal government for relief—at least until the backlog of school demand is overcome.

But federal aid to schools has fared badly in recent Congresses, and the future outlook isn't much different. No aid has ever been voted for school construction. Last year's National Defense Education Act provided some matching funds for science lab equipment and teachers' salaries. But it looks unlikely that any further federal aid will come from this session of Congress.

The Administration has proposed a bill to help local school districts finance the debt on new school construction money, thus making it easier to float bonds. The federal government, in effect, would pay half the debt service charge and the state government the other half. If all the needy school districts participated, this would set the U. S. Treasury back only $17 million next year thus safeguarding the President's budget. At the end of five years it would be costing the federal government $85 million a year. By the end of the 25-year period, when the debts have all been retired, Uncle Sam would be out $2 billion.

Secretary Flemming says that if state and local governments took full advantage of the plan, it would result in the construction of 75,000 more school rooms over the five-year period—enough to close the gap.

The Democrats have not even given this proposal serious consideration. They tag it as aid to bankers, not schools. They point out that even if states wanted to go 50-50 with the federal government on debt service charges, many of them could not do so without changing their laws.

Instead, the house committee has passed a four-year, $4.5-billion program of direct grants for construction. Secretary Flemming has already warned that the President would veto it.

The result: stalemate on any hopes for federal aid this year.

Classroom Needs: Five-Year Outlook

State	Available Beginning 1958-59	Scheduled For Completion In 1958-59	New Rooms Needed by Spring '64
Continental U. S	1,232,667	68,440	418,200
Northeast Region			
Connecticut	16,241	854	5,600
Delaware	2,805	378	1,000
Maine	7,450	87	1,900
Maryland	18,027	1,214	9,100
Massachusetts	35,432	1,332	9,400
New Hampshire	3,880	108	1,600
New Jersey	33,700	1,600	11,400
New York	106,400	6,100	32,200
Pennsylvania	68,098	1,916	.....
Rhode Island	4,407	270	1,500
Vermont	3,086	117	1,400
District of Columbia	3,667	135	1,000
Great Lakes and Plains			
Illinois	56,892	2,487	14,700
Indiana	31,522	2,000	9,200
Iowa	19,965	600	7,200
Kansas	.....	410	.....
Michigan	58,978	4,500	22,800
Minnesota	26,222	1,500	9,000
Missouri	29,035	1,500	9,600
Nebraska	13,798	218	3,100
North Dakota	.....	200	1,200
Ohio	63,334	3,386	17,200
South Dakota	8,407	212	2,600
Wisconsin	29,741	1,700	4,400
Southeast			
Alabama	23,375	963	15,300
Arkansas	9,954	400	2,800
Florida	28,194	2,031	14,200
Georgia	30,272	1,149	15,000
Kentucky	22,290	1,000	13,700
Louisiana	23,652	1,808	8,800
Mississippi	15,212	2,776	9,700
North Carolina	37,711	1,525	12,600
South Carolina	19,149	511	7,600
Tennessee	24,048	1,100	8,100
Virginia	27,187	1,599	11,900
West Virginia	16,171	178	4,400
West and Southwest			
Arizona	8,562	303	4,200
California	98,000	11,000	35,100
Colorado	14,188	1,000	4,900
Idaho	5,792	285	1,900
Montana	6,669	192	1,900
Nevada	2,229	173	1,200
New Mexico	7,627	604	3,900
Oklahoma	25,512	1,000	3,600
Oregon	14,497	490	4,900
Texas	70,876	3,917	25,600
Utah	7,340	543	2,700
Washington	20,875	949	8,100
Wyoming	3,315	120	600

Data: U. S. Office of Education. [1] Projections based on survey of states. Includes needs for increased enrollment and replacement. [2] U. S. total includes estimates for missing states. [3] Kansas and Pennsylvania omitted because of missing data on 1958 backlog.

High-Strength Steel Spans the Tennessee

A plate girder bridge of high-strength steel will begin carrying traffic over the Tennessee River at Chattanooga in early autumn. It will be called the P. R. Olgiati Bridge.

The bridge will be 2,641 ft long and carry two 26-ft roadways. Despite its size, only 6,572 tons of steel will be used in construction—because of the high-strength material.

The bridge is being built for the Tennessee Department of Highways and Public Works at a cost of $6.2 million, not including approaches. The major contract, for fabrication and erection of steel, went to Bethlehem Steel Co. for $4.3 million.

It is a continuous girder span, made up of a 375-ft center span and two end spans of 275 ft. It weighs 3,193 tons and crosses the 350-ft navigation channel at a height of 72 ft. Twelve simple spans make up the rest of the bridge.

Construction of the bridge began in 1955. Bethlehem crews started steel erection in February, 1958, and put the final girders in place late in 1958.

Foster & Creighton Co. of Nashville is constructing the roadway, parapet walls and handrails and doing the electrical work and painting. A. F. Hedman of Chattanooga designed the bridge.

NSPE Gives EJC the Cold Shoulder

The National Society of Professional Engineers discussed the merging role of scientists and engineers last week at its 25th anniversary meeting in New York City. At the same meeting it declined again to "merge" its membership with other U. S. engineering societies within Engineers Joint Council.

Some 200 delegates attended two days of NSPE business meetings and an estimated 1,000 registered for the general sessions and anniversary celebrations, which culminated with installation of Harold A. Mosher as new NSPE president. He is with Eastman Kodak.

The NSPE Award went to William E. Ryan, past president of the American Society of Mechanical Engineers and retired vice president of Stone & Webster Engineering Co. of New York City.

James F. Fairman, vice president of Consolidated Edison Co. of New York City, moderated a discussion on the annual meeting's theme—the merging role of science and engineering.

Mr. Fairman seemed to see the two fields combining. He recalled war efforts that fostered the team concept. His two speakers, however, did not agree.

C. H. Linder, vice president of General Eleteric Co., offered definitions to prove that science and engineering are two different things. His definitions seemed to boil down to the fact that science makes it known, engineering makes it useful. He thinks it important that this distinction be recognized as scientists and engineers work ever more closely together, and even switch roles.

John C. Calhoun, Jr., vice president for engineering of Texas A&M College, asked that the individual identity of scientists and engineers be kept in the public mind. He cited several logical reasons why there is an apparent merging of the two fields, but he stressed that this merging has not been and cannot be real.

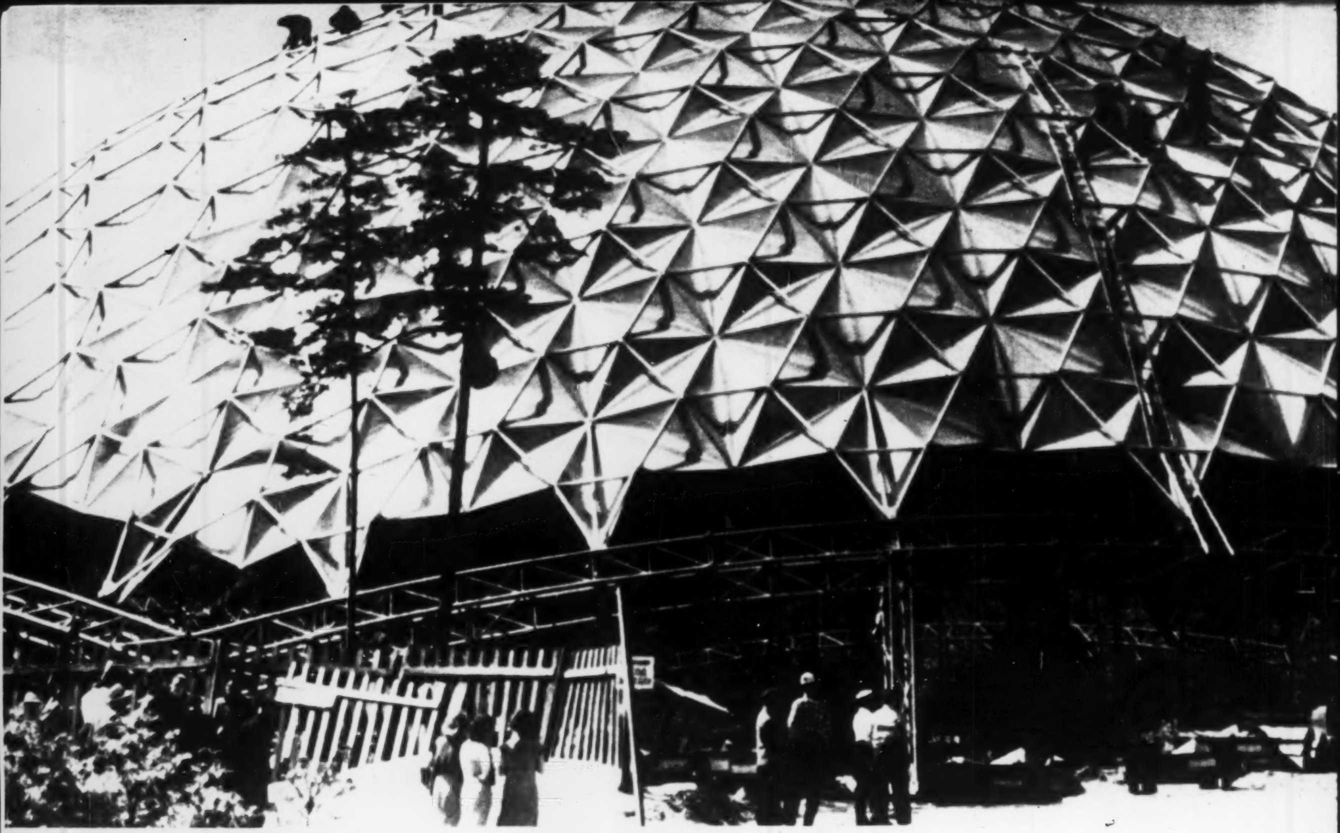
• **Unity invitation declined** NSPE's directors expressed "sincere appreciation" for the cordial invitation to join EJC, but for the second time in six years recommended that the society should "not apply for membership at this time."

Reasons given include EJC's mention of the "art and science of engineering" in its objectives (NSPE is concerned only with the "professional, social and economic interest of the professional engineer"), and EJC's statement that "no substantial part of its activities . . . influence legislation" (much of NSPE effort is to do just that).

• **Ambassadors assigned** The judges' selection of an NSPE member and his wife to go abroad under "Project Ambassador" delighted NSPE members present. The "ambassador" was chosen from among contributors to a recent fund drive, which brought in $65,000. A coming dues raise should help swell the coffers further.

Chosen was Rodney D. Chipp, director of engineering of ITT Communication Systems, Inc. He and his wife, Beatrice A. Hicks, who is also a NSPE member, will go to South America in the spring of 1960; their itinerary is not yet set.

"Project Ambassador" NPSE says, is an effort to forestall the "Ugly American" concept in the minds of those who meet U. S. engineers abroad. NSPE's purpose is to try to define the problems faced by engineers overseas and "see what we can do to solve them."



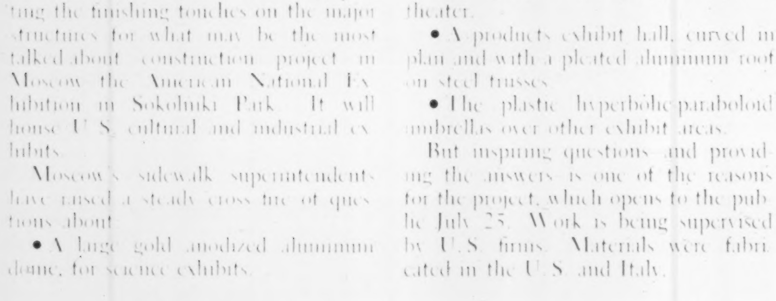
US Gives Moscow Something to

Soviet construction workers are putting the finishing touches on the major structures for what may be the most talked-about construction project in Moscow the American National Exhibition in Sokolniki Park. It will house U.S. cultural and industrial exhibits.

Moscow's sidewalk superintendents have raised a steady cross fire of questions about:

- A large gold anodized aluminum dome, for science exhibits.
- Its smaller counterpart, for a movie theater.
- A products exhibit hall, curved in plan and with a pleated aluminum roof on steel trusses.
- The plastic hyperbolic-paraboloid umbrellas over other exhibit areas.

But inspiring questions and providing the answers is one of the reasons for the project, which opens to the public July 25. Work is being supervised by U.S. firms. Materials were fabricated in the U.S. and Italy.



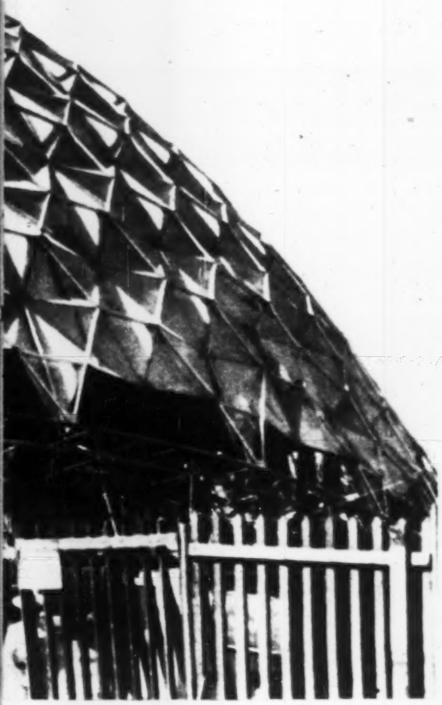
U. S. EXHIBITS in Sokolniki Park will be housed in two domes, three groups of hyperbolic-paraboloid umbrellas and a curved building with a pleated roof.

The 200-ft-dia. spherical aluminum dome was assembled in two weeks—but only after many months of preparation.

Kaiser Aluminum fabricated the aluminum sheet at Trentwood, Wash. Universal Products of Dallas gold-anodized the metal and sprayed a protective film on it. The erector, Lydick Roofing Co., Ft. Worth, shipped the sheet flat to Moscow, intending to form the 1,100 diamond-shaped panels comprising the dome at the site on a Russian brake press. The Russians, however, had none available at the time. So Russian crews formed the panels on an American press sent from the Brooklyn Navy Yard to meet the emergency.

The dome's concrete foundation also was prepared by Russian crews. But the six steel-pipe trussed arches that are seated on the foundation and support the 200-ft dome were erected by Italian workmen. These men were employed by Reynolds-Feal, of New York City, the general contractor for the project.

To erect the dome, Lydick Roofing supervisors had Russian construction men first set up a central, temporary 130-ft mast. After the crown panels were assembled, the men used the mast to lift them sufficiently to permit installation of a ring of panels around the perimeter. This section of the



Talk About

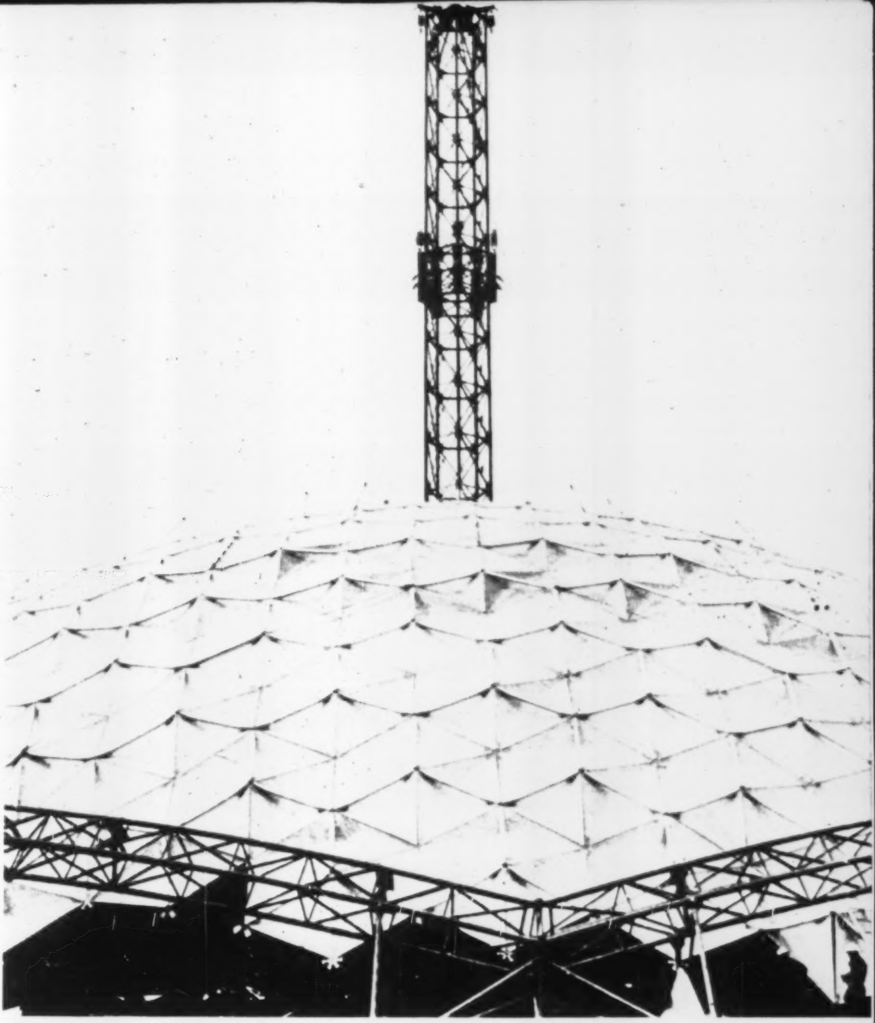
dome was then raised to allow installation of another ring. The process was repeated until the dome was completed, after which it was lowered onto the steel arches.

The dome was developed by Kaiser Aluminum engineers from an original design by R. Buckminster Fuller, Raleigh, N. C. It weighs only 52 tons. Only 14 different size panels were required. They range in size and weight from 11½x7-ft, 65-lb units down to 9x5½-ft, 41-lb units.

Under Reynolds-Feal supervision, the Russians also have nearly completed the pleated-roof building. This 120x500-ft curved structure will provide 50,000 sq ft of exhibit area. End walls will be masonry; front and rear, glass in steel frames.

Welton-Becket & Associates, of Los Angeles, is the architect-engineer for the project. Richard R. Bradshaw is the consulting structural engineer.

Reynolds-Feal, the general contractor, though a U.S. corporation, consists of about 20 affiliated metal-working and construction firms from a half-dozen European countries. It specializes in constructing exhibition buildings abroad, having directed similar jobs in Addis Ababba, Algiers, Caracas, Casablanca, Damascus, Mexico City, Salonika, Tunis and Zagreb.



Central mast lifts aluminum dome assembly then . . .

. . . Workmen attach diamond-shaped panels around perimeter.

Around the World . . .

• Chicago building plans—Public Building Commission of Chicago is considering construction of $61 million worth of courts and office buildings. Louis R. Solomon & Associates, Chicago architects, are preparing preliminary plans.

• More Memphis power—Memphis is considering a fourth generating unit for the recently completed Thomas A. Allen generating station.

• Equipment prices steady—Average construction equipment prices remained stable in May, says the U.S. Bureau of Labor Statistics. However, some price reductions pulled the June cost index down one-tenth of a point from May to 171.9.

• Nassar okays dam—Plans for a $140-million to $170-million dam on the Euphrates River in northern Syria reportedly have won the approval of President Nasser of the United Arab Republic. The dam will be 230 ft high and three miles long. It will impound 1.5 million acre-ft of water to irrigate 1.6 million acres.

• Biggest generator?—Westinghouse Electric Corp. proposes to build an 800,000-kw steam turbo-generator for the Tennessee Valley Authority. It would be the largest ever built.

• Fish ladders for salmon—Wanapum Dam on the Columbia River will be equipped with fish ladders costing an estimated $2 million.

Big Market for Small Contractor

The federal-aid highway programs are providing a rich source of business for small contractors, government figures show (see table).

The Bureau of Public Roads reports that 11,102 federal-aid highway construction contracts were awarded through state highway departments in 1958. Of the total, 92% were for $1 million or less. The dollar volume of under-$1-million contracts was $1.8 billion, 47% of the $3.8 billion in total contracts awarded.

Contracts are those for the Interstate system and federal-aid primary and secondary roads.

Through 1958 contracts varied from less than $25,000 up to $11 million, 47.1% were for less than $100,000, well within the range of smaller construction firms. Thirty percent were for less than $50,000.

Moreover, 23% of the contracts awarded were in the $100,000-$250,000 class. That means that 69.8% of all federal-aid highway contracts last year were in the $250,000-and-under bracket.

The 1959 contract total of $3.8 billion represents more than a 50% increase over the 1957 volume of $2.4 billion. The 11,102 contracts let last year are also about 50% over the 1957 total of 7,386. Average cost of 1958 contracts was about $340,000.

Highway Contracts: How They Look

Size of Contract (dollars)	Total Number of Contracts	Percent Of Total Contracts	Total Amount of Low Bids	Percentage Of Total Value
$0-24,999	1,603	14.44	$24,072,500	0.63
25,000-49,999	1,743	15.70	64,103,500	1.69
50,000-99,999	1,878	16.92	135,173,600	3.56
100,000-249,999	2,523	22.73	411,629,800	10.84
250,000-499,999	1,519	13.68	540,393,600	14.23
500,000-999,999	959	8.64	663,272,800	17.46
1,000,000-1,999,999	526	4.74	739,975,700	19.48
2,000,000-2,999,999	177	1.59	434,884,400	11.45
3,000,000-3,999,999	84	0.76	288,075,800	7.58
4,000,000-4,999,999	42	0.38	189,063,200	4.98
5,000,000-9,999,999	46	0.41	286,814,100	7.55
10,000,000-14,999,999	2	0.01	20,724,800	0.55
15,000,000-and over	0	0	0	0
TOTALS	$11,102		$3,797,983,800	

Norfolk Backtracks on the Little Red School House

The Norfolk, Va., School Board has cooled to the idea of bringing back the "little red school house" (ENR Apr. 16, p. 37).

Earlier this year the City Council proposed that three- and five-room neighborhood schools be built for primary grades. Mayor Fred W. Duckworth said then the schools would represent a saving in construction costs. He said they would be more convenient for small children and would not leave the city with large, half empty schools that might be depopulated because of desegregation.

Work went ahead on two of the small schools.

Now, with a third vest-pocket school up for approval, the School Board is asking for another look at the proposal. Construction savings haven't been as great as expected, and some board members don't think the small schools will offer the same advantages as larger ones.

Some observers had suggested the smaller schools would slow integration in the first three grades.

New Jersey Turnpike May Pay Railroad Bills

Gov. Robert B. Meyner of New Jersey is proposing that the New Jersey Turnpike Authority's bulging coffers be tapped to aid railroads and possibly bus lines.

His program, aimed at solving the state's commuter transportation problems, calls for state outlays of up to $51 million next year and as much as $630 million in the next 28 years. Governor Meyner estimates that $30 million to $40 million are now available from the road's surplus revenues.

Legislative approval of the program will be necessary, followed by a referendum in November.

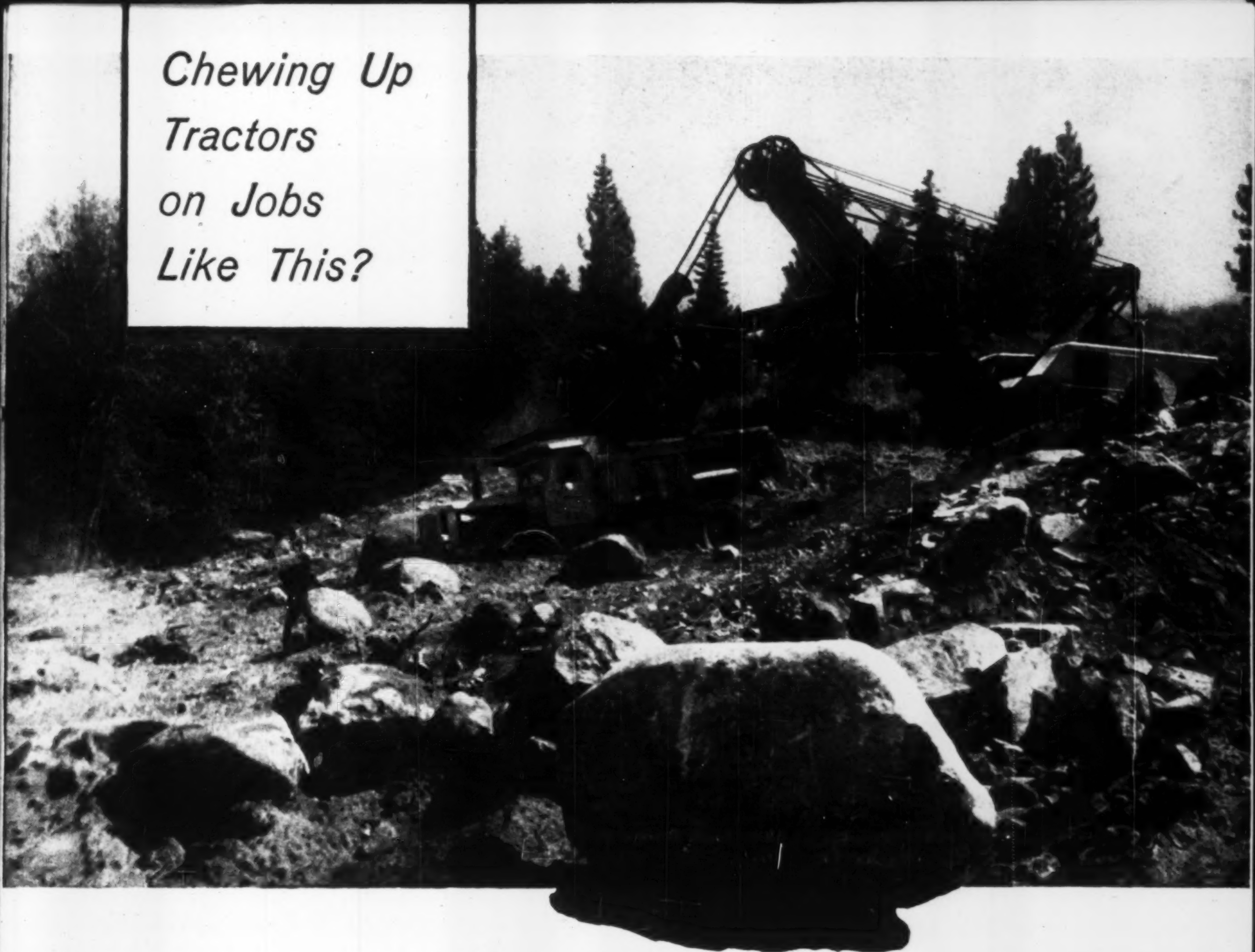
Airline Builds $20-Million Jet Center in Tulsa

American Airlines' $20-million jet maintenance and engineering center in Tulsa was dedicated last week. It has 1 million sq ft of floor area under roof. The company has spent $20 million to prepare the facility for handling jet planes.

Four hangars on the 229-acre site were built during World War II, later purchased by Tulsa and leased to American. The expansion in the last two years added 350,000 sq ft to the 657,000 sq ft already under roof.

Coston-Frankfurt-Short, of Oklahoma City, were the architects. Manhattan Construction Co., Muskogee, Okla., was the general contractor.

Chewing Up Tractors on Jobs Like This?



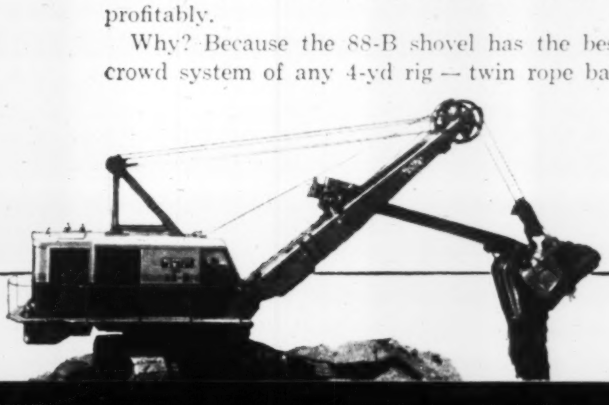
4-yd 88-B Proves a Point on Mountainous Interstate 40

Does a big shovel have a place on today's highway jobs? Wood-Kirst Company made it an emphatic "YES" as its 4-yd Bucyrus-Erie 88-B banged through its 700,000-cu yd share of a 1,200,000-yd job on relocation of U. S. Interstate 40 near California's worst snow zone—mountainous Donner Pass.

Wood-Kirst proved there was no need to tear tractors to pieces with rippers and scrapers in this marginal material . . . by putting the *big* shovel to work. It handled the job faster and more profitably.

Why? Because the 88-B shovel has the best crowd system of any 4-yd rig — twin rope balanced crowd. It gives the operator full control over both crowd *and* hoist at the most critical point in the digging cycle — as the dipper enters the bank. With speed and force automatically proportioned between these two functions, it's no wonder that the 88-B, in straightaway mucking, turned out truckloads of material in four passes, including broken granite where bank toe was exceptionally tight. Assigned to the toughest rock on the project, the 88-B logged over 700 hours worktime with only 5 hours downtime!

PROVE THE POINT TO YOURSELF! We'll be happy to go over the advantages of 88-B operation with you. Write Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept. 20EA.



BUCYRUS ERIE®

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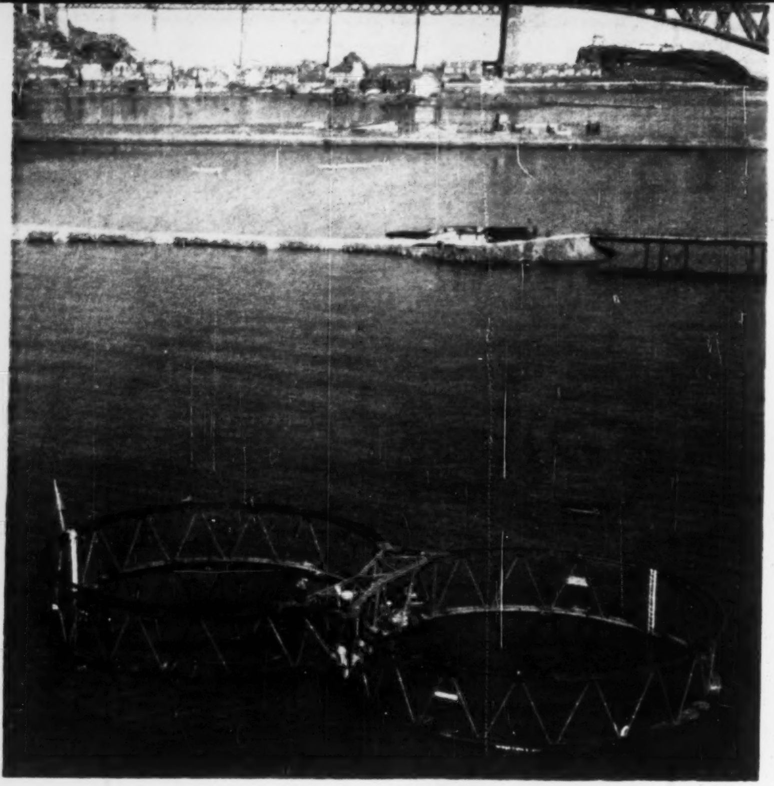
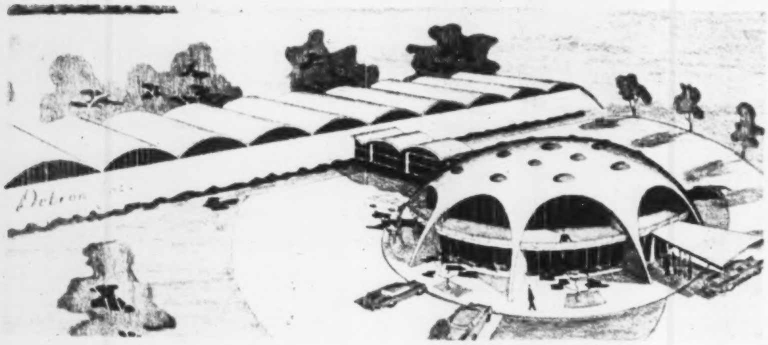


Figure 8 Starts the New Forth

This floating figure 8 is a template, 165 ft long and 85 ft wide, for the cofferdam for the south main pier of Scotland's New Forth Bridge. The foundations for this pier will be seated on rock 120 ft below the surface. The New Forth Bridge will cost $46.2 million and be 5,980 ft between anchorages, with a main span of 3,300 ft. It will be the longest suspension span in Europe. The old Firth of Forth Bridge is in background.



Curved Concrete Covers Plant

Thin-shell concrete roofs are being constructed for the buildings of Debton, Inc. in Tulsa, Okla. The firm prints contemporary greeting cards.

An office building will be a 170-ft-dia circular dome; and a combination warehouse and printing plant will be capped with a corrugated roof, walled with precast, exposed-aggregate concrete panels. The two structures will be connected with a glassed-in breezeway.

The dome will be pierced by 18 small openings, which will be covered with plastic "bubbles."

Novel installations in the plant include electronically operated doors and a television intercommunication system.

Donald A. Jalbert, Tulsa architect, designed the $1.2-million plant, which provides 200,000 sq ft of floor area. A contractor for the job has not yet been selected.

Science at the Top

Operations research urged for improved management

Trial and error methods must give way to scientific management methods in the construction industry. So advised Brig. Gen. D. W. Heiman, Assistant Chief of Engineers for military construction, at the 67th annual meeting of the American Society for Engineering Education, held last week in Pittsburgh.

General Heiman told delegates construction companies would profit by the use of operations research. He suggested the subject be made part of more engineering curricula.

He said operations research could be applied to earthmoving, overhaul and disposal of equipment, foundation investigations, dredging operations, and the design, procurement, use and disposal of scaffolding and concrete forms.

The general defined operations research as "the application of scientific methods, techniques and tools to problems involving the operations of a system so as to provide those in control of the system with optimum solutions to the problems."

"Operations research may perform for construction management the service it has already performed in many other fields," he said. "Since it stems from scientific disciplines, it may provide the manager of major construction with better solutions to his problems than those evolved by practice, by experience, by the empirical."

Representatives of industry and the academic world took part in the society's four-day meeting.

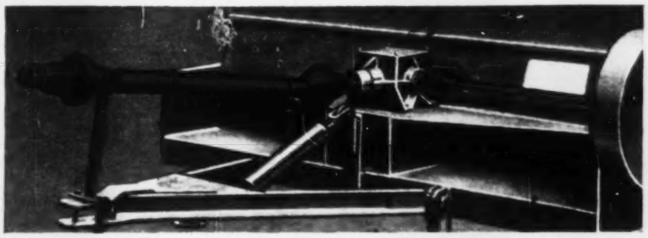
'Ring Road' Is Featured In Downtown Building Plan

A "ring road" freeway circling downtown Seattle is featured in a "Central Area Comprehensive Plan" now being prepared for the city.

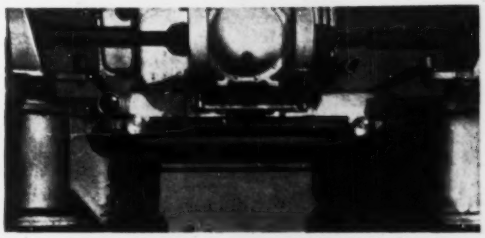
The plan is expected to set the pattern for private investment and guide expenditure for public construction funds in the central business district for years to come.

Multistory parking facilities between the freeway and the core area would be encouraged under the plan. It also anticipates a rapid transit system to carry commuters to the suburbs.

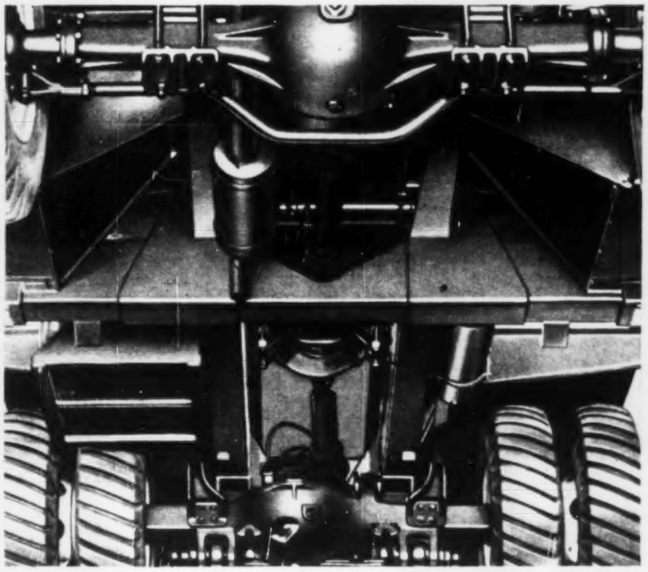
The plan is being prepared by the Central Association, made up of downtown business interests, and the City Planning Commission's central business district planning committee, which is headed by architect Paul Thiry. The plan is expected to guide the commission in rezoning the downtown area.



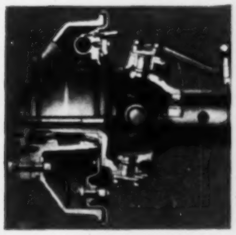
Shielded Farm Implement Drive, Tractor P.T.O. to Gear Box



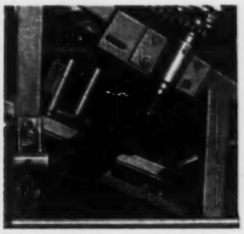
Differential to Drive Sprocket, Straddle Truck



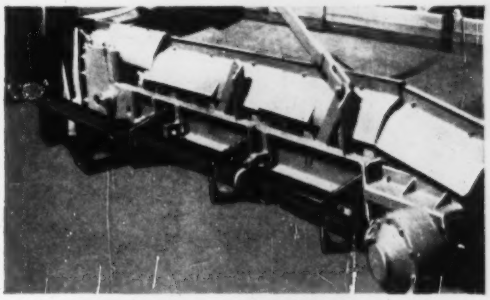
Mobile Crane, All-Wheel Drive Propeller Shafts



Jointed Front-Driving Axle



High Angle, Double Joints



Road Grader, Detachable Belt Conveyor Drive

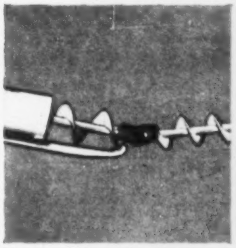
POWER TRANSMISSION PROBLEMS SOLVED

with Blood Brothers U-Joints

Rockwell-Standard engineers see—and help *solve*—a tremendous variety of problems involving a need for universal joints. Applications range from manual steering assemblies…to power take-off drives…to heavy duty propeller shafts.

To "get the power through," Blood Brothers Joints are built in the widest range of types and sizes. This range, plus application experience, can be valuable to you. Whether you want to "take power around corners"…or allow for possible minor misalignments—you can call on Rockwell-Standard engineers.

They'll cooperate to save your staff's time—on common or unusual power transmission problems.



Jointed Screw Conveyor

Tractor Steering Assembly

Transmission P.T.O. Drives Pump and Gear Box

ROCKWELL-STANDARD CORPORATION

Blood Brothers Universal Joints

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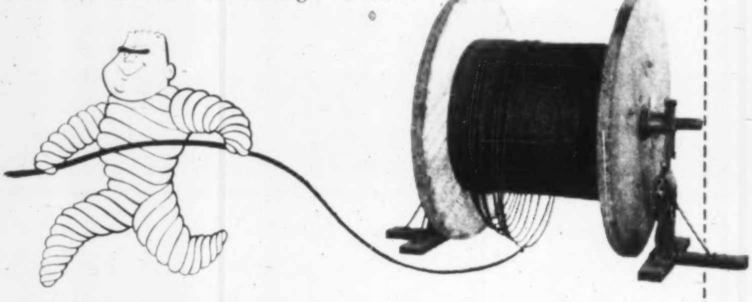
Tuffy® *Wire Rope* Tips

More Damage is Done by Broken Rules Than by Broken Strands—

Rule 1: RIGHT WAY to Set Up Reel for Unwinding

The stock reel should be set up on jacks, so the rope will come from the under side of the reel.

In the picture below, unwinding has started and the reel is turning faster than the rope is being pulled off. But no damage is done. Why? Because in coming from the under side of the reel, the rope is simply loosening, without forming loops or kinks.



Tuffy Balanced Dozer Rope

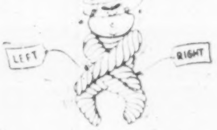
Built to give you longer service with less downtime. Mounted on your dozer, a 150' reel of ½" or 9/16" can give you a big bonus of extra service. Here's how: when rope shows drum wear or is crushed on the drum, you feed through just enough to replace the damaged part. You save the 40 to 50 feet ordinarily thrown away. Also available in 300' and 500' reels.

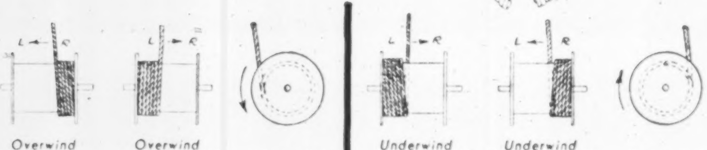
Rule 4: What's The Correct Lay for Each Type of Winding?

"Lay" refers to the direction of the strands in wire rope. It's a **right** lay rope when the strands pass from left to right across the rope. It's **left** lay when they pass from right to left.

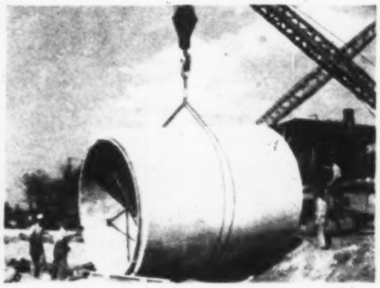
The direction of winding on the drum is determined by standing behind it, looking toward the direction of rope travel.

When winding one layer only on a smooth drum, the right and left lay ropes indicated in the drawings below will give the best service.





Overwind *Right to Left* **Left Lay Rope**	*Overwind* *Left to Right* **Right Lay Rope**	**Overwind**	*Underwind* *Left to Right* **Left Lay Rope**	*Underwind* *Right to Left* **Right Lay Rope**	**Underwind**



Tuffy Balanced Scraper Rope

"Balanced" construction makes it flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Also gives higher resistance to the shock of load impact on slack line. Moves more yardage per foot because it's specially built to take the beating of drum-crushing abuse.

Tuffy Balanced Dragline Rope

Here's highest abrasive resistance with super flexibility. Better spooling. Smoother riding on grooves. And Tuffy Dragline Rope hugs the drum when casting for full load. Gives you longer service life, consistent dependability, in handling any material—wet or dry dirt, sand, gravel, rock, cement or minerals.

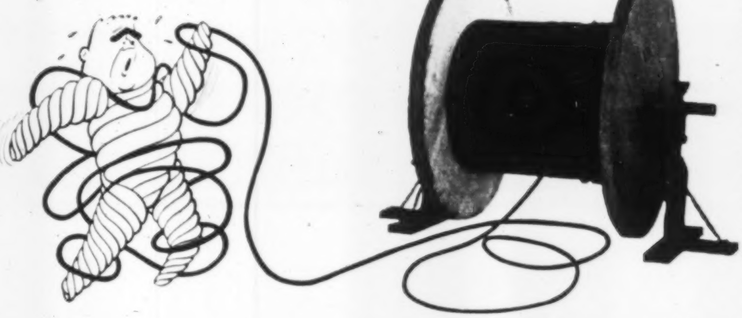
Tuffy Balanced Slings & Hoist Lines

"Balanced" because they combine strength, flexibility and toughness in the proper relationship to do a better job longer.

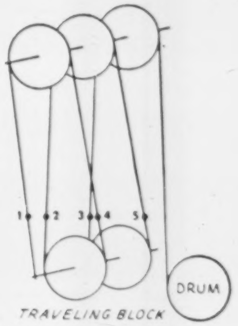
Tuffy Slings and Hoist Lines are a top-performing team in every type of materials handling. The slings are made of a patented, machine-braided fabric that's next to impossible to knot or kink. The hoist lines are a special construction in which strength, flexibility and toughness are balanced.

Rule 2: WRONG WAY to Set Up Reel for Unwinding

The rope is coming from the top of the reel and forming loops as it overruns. These loops are likely to form kinks and dog legs, which can be ruinous to rope life.



Rule 3: How to Figure Reeving Loads



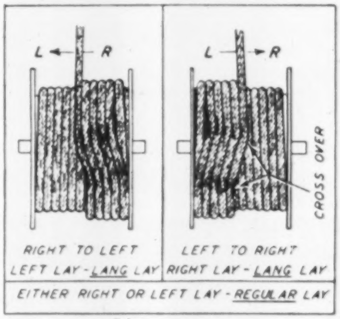
Reeving ropes through the sheaves multiplies the number of parts supporting the load. The lead line to the drum carries the weight of the load lifted, divided by the number of parts, plus the accumulation of friction on all sheaves.

To count the number of parts supporting the load, draw an imaginary line across the parts of the rope supporting the load.

The efficiency of reeving systems ranging from one to eight parts is shown in charts which Union Wire Rope engineers make available to users.

Rope for multiple layer winding: When a rope winds in the first layer across the face of a drum, it usually forms a uniform helix. On reaching the flange of the drum, the rope rides upon the last turn and starts winding back across the face of the drum, but falls into the depression of the successive turns of rope on the first layer.

Advancing across the drum on the second layer, the rope, following the depressions of the first layer, actually winds **back** a turn in each revolution of the drum. It must then cross over **two** depressions of the first layer to have a net advance of one turn per revolution.



This cross over is unavoidable on the second and succeeding layers. Severe punishment of the rope results, due to abrasion of the adjacent turns against each other, and the crushing from the next layer above at these points. Parallel-grooved controlled cross-over drums minimize this condition.

Rule 5: Use the Tuffy Special Purpose Wire Rope "Tailored" to a Specific Application

There was a time when just any size and lay of rope was cut from a stock reel and used for just about any kind of service. It's different today. The various constructions of Tuffy Ropes are precisely fitted to each type of use.

There are thousands of different wire rope constructions. Union Wire Rope makes them all. But there's only one Tuffy line of ropes. Each Tuffy is the right rope and the best rope for the particular work for which it was developed. Each is "job prescribed". Each has the right balance of strength, flexibility and toughness to give you longest service, greatest efficiency and safety.

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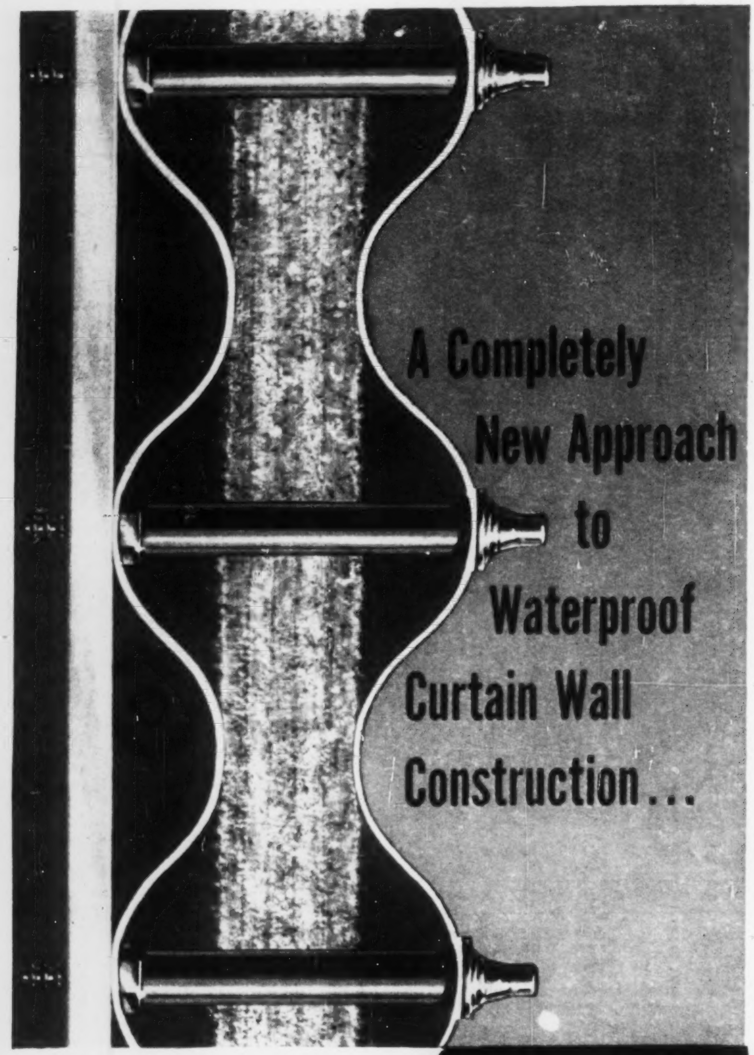

Patents pending

Strong, waterproof curtain wall construction is economical using the new Townsend Tuff Tite tapping stud system. The complete erection job can be handled easily by regular sheeting crews, since the tools suitable for sheeting screws are satisfactory for installing the studs. A savings in time and equipment cost is assured.

Tuff Tite tapping studs permit valley fastening on the inner skin, which greatly increases joint strength; and the conical neoprene washer provides an absolutely waterproof seal. See Sweet's Catalog or write for Bulletin TL-135. Townsend Company, P. O. Box 71-L, Ellwood City, Pa.

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Tapping Studs

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California Votes Cash For Feather River Job

The California legislature has approved a bill calling for a $1.7-billion bond issue for water development. The program is designed to supply arid southern California with water from Feather River in the water-rich north.

The giant bond issue will go before the state's voters on the November, 1960, election ballot—but work on the huge project will not have to wait. The legislature has appropriated close to $85 million for work in the next fiscal year, which starts next month.

The state was able to get an immediate start on the project because of $172 million in tideland oil royalties earmarked by the legislature for water development. This fund is expected to swell at the rate of $30 million a year and is believed enough to carry on a full-speed construction program until the bonds are voted.

The state's budget for the coming year includes $25 million for Oroville Dam on the Feather River in the northern part of the state. Oroville Dam will be a major storage unit for water to be moved hundreds of miles into southern California by an aqueduct system. Nearly $44 million was appropriated for rights-of-way for the aqueducts needed. Close to $40 million has already been spent for highway and railroad relocation in the Oroville reservoir area.

The legislature's action ends a five-year fight between the north and south. To satisfy southern demands, the bill provides that contracts for water cannot be ended by legislative action during the life of the bonds.

Income from sale of the project's power and water is pledged to upkeep of the system and retirement of bonds. Any surplus revenue will be channeled into new construction.

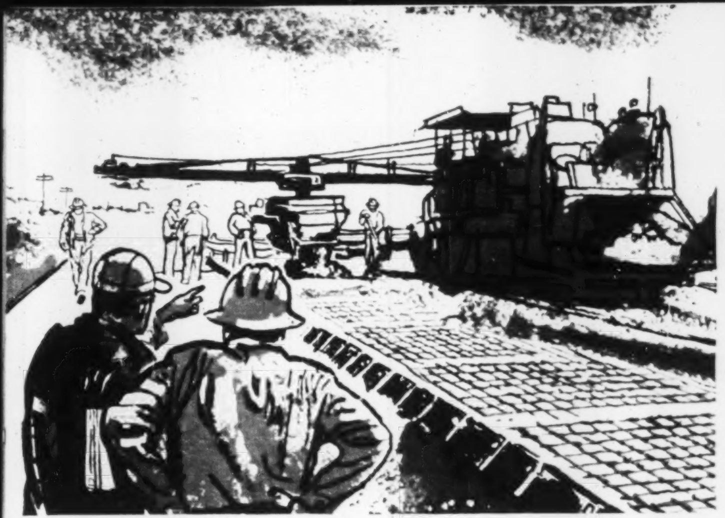
The state's expenditures on the project are expected to average $100 million annually during the first five years and $153 million annually during the second five years.

Bill Fits School Code To Town's Requirements

The Vermont legislature has trimmed the power of the State Board of Education to control standards of local school construction.

The bill is a result of protests from local school officials that State Board of Education requirements for construction aid were forcing many small communities into debt because of "frills."

The bill is aimed at making state control flexible enough to weigh a community's minimum academic needs in relation to its economic and financial responsibilities.



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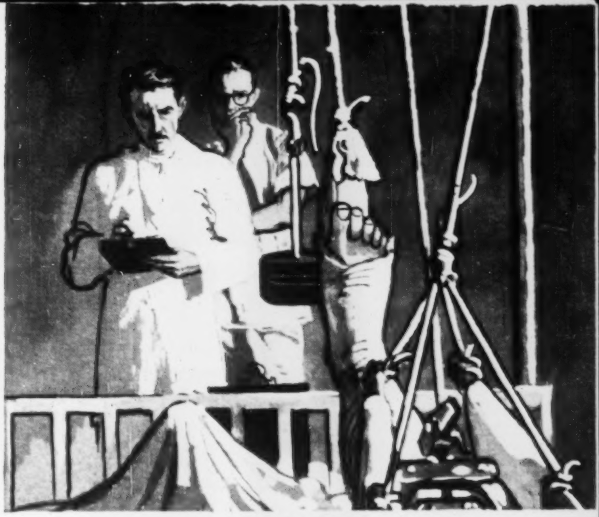
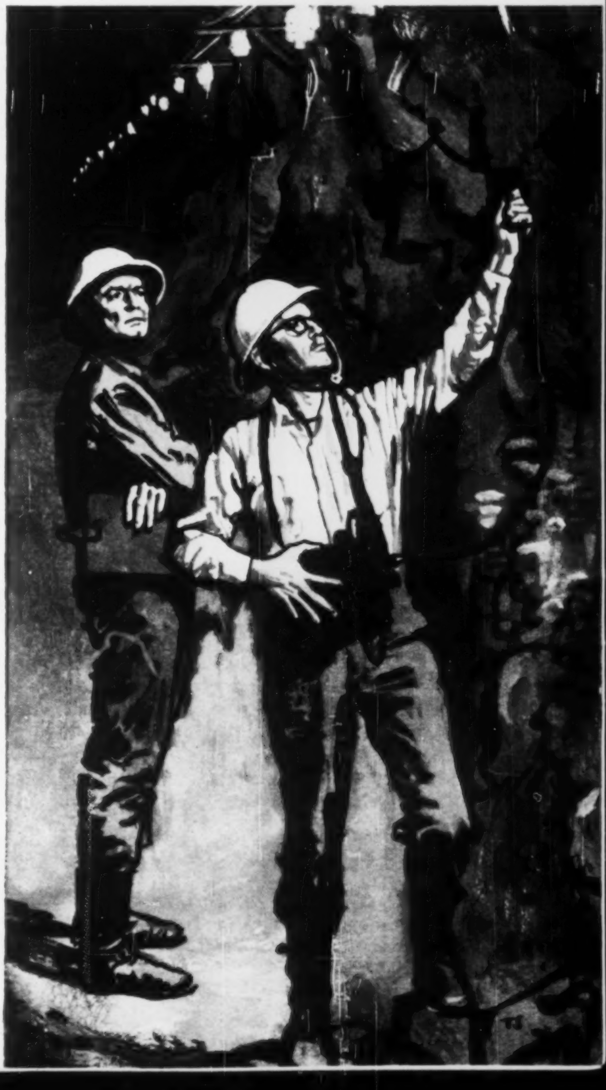


Broken bone gets new diagnosis. Liberty depends on 75 leading orthopedic surgeons in key areas of the U. S. to review diagnoses of serious cases, advise attending physicians. This medical advisory service helps speed the recovery and return to work of severely injured employees of policyholders.

Listening to rock molecules. Using a micro-seismic detection apparatus, a Liberty construction safety engineer listens for "squeaks" made by rock under strain. This device, developed by Liberty, makes it possible to foretell the collapse of a tunnel, helps policyholders prevent accidents, cut compensation costs.



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These services give you what we call protection in depth. Some of them are pictured on this page. All these resources are backed by the financial strength and experience of the largest writer of compensation insurance.

Liberty's protection in depth has helped hundreds of construction policyholders cut costs through rate reductions. And it has enabled us to return more than $491 million in dividends. To find out how protection in depth can help you with your compensation insurance problems, write or phone the nearest Liberty Mutual branch office.

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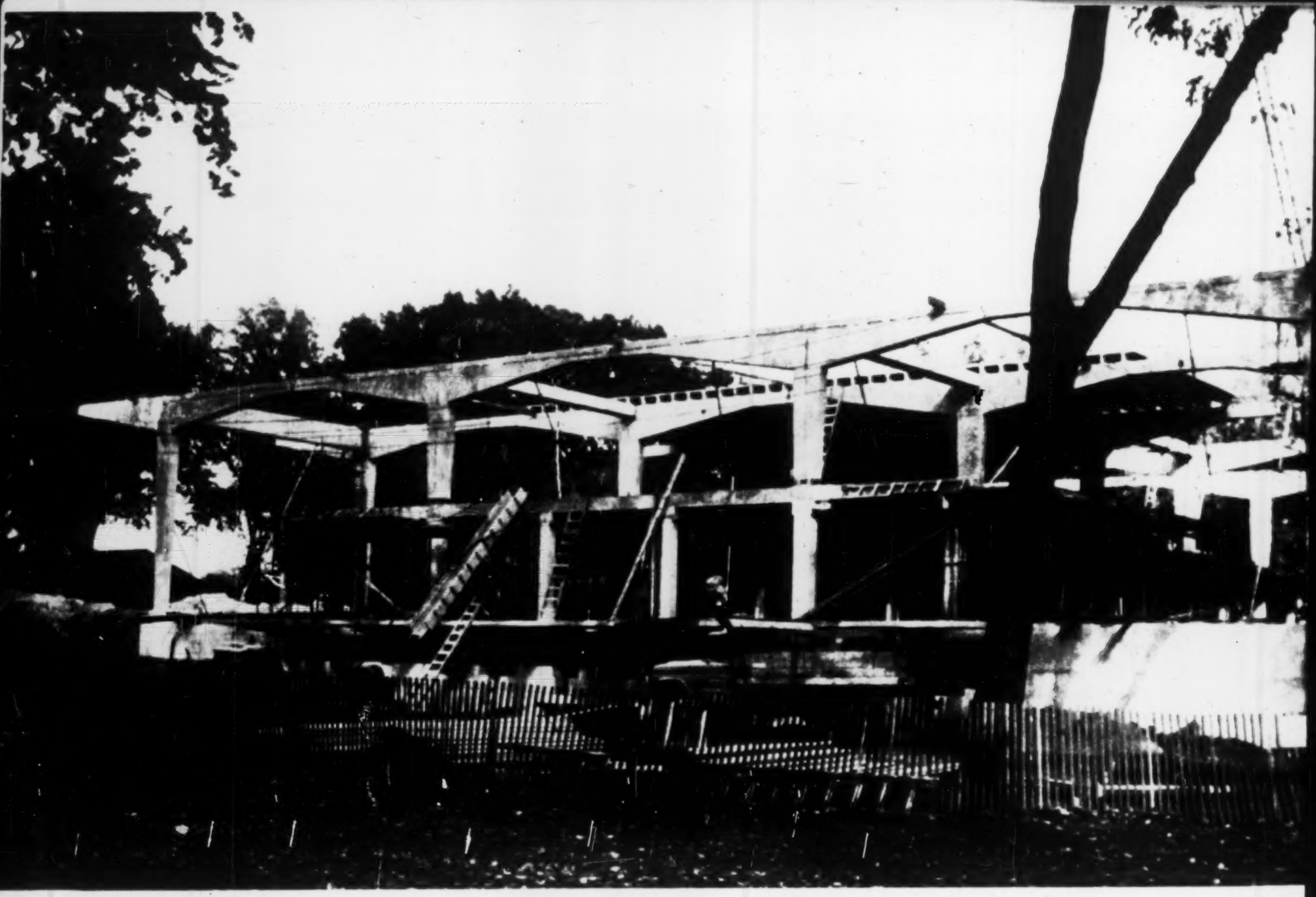


Precast T-Frames Speed Library

The designers had speed and economy in mind when they specified precast concrete beams, T-frames and double-tee roof units for the Grinnell College Library, Grinnell, Iowa.

Precast concrete for the roof system was selected for three reasons:

- Fire resistance was provided without the handicap, architecturally and mechanically, of a relatively high-cost ceiling.
- It was estimated to be more economical than fireproofed steel or cast-in-place reinforced concrete.
- Precast concrete offers lower maintenance than other systems.

The 153x136-ft roof of the three-story rectangular building has a column spacing of 27x40.5 ft. At the ends are 15-ft 9-in. T-frame cantilevers.

A 81x135-ft mezzanine was built of cast-in-place reinforced concrete. It consists of one-way slabs and flat shallow beams, with 13½-ft column spacing.

Construction of the 145x136-ft first floor is similar to that of the mezzanine, except for cantilevered balconies, which are carried on haunched members. They are similar in shape to the precast T-frame members used for the roof.

The building is supported on drilled-in subpiers carried to a depth of 24 ft. Shaft diameters vary from 18 in. to 3 ft, and bell sizes from 4.5 ft to 8 ft. The foundation plan covers an area 121x135 ft c-c of outside pier lines. A soil bearing pressure of 6,000 psf was used in the design.

• **Unit strengths**—Concrete in the T-frames was specified to have a minimum compressive strength of 5,000 psi at 28 days. Actual strengths developed ranged from 5,200 to 7,000 psi.

Concrete in the other elements of the building—including precast double tees (TT), mezzanine and first-floor slabs and girders, columns, foundations and the drilled-in subpiers—was required to have a minimum 28-day strength of 3,000 psi. Actual strengths developed ranged from 3,900 to 5,700 psi.

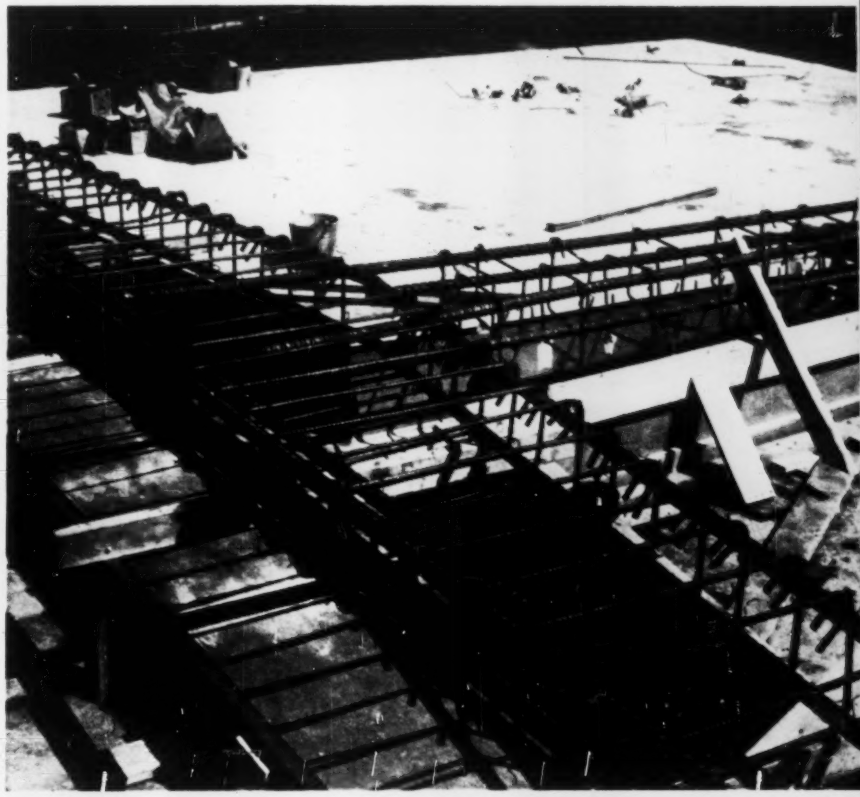
Reinforcing steel used throughout the structure was intermediate grade with a yield point of 40,000 psi.

• **T-frame design**—The T-frames were analyzed as a series of three-hinged elements connected at the cantilevered ends and bases by pins. The precast beams framed between the T-frames were analyzed with the columns as a series of rigid frames with fixed bases. Precast details were developed to withstand the moments and shears thus computed, provide ample erection tolerances and allow complete fireproofing of the connections after they were made.

Deflections of members due to dead load, live load and plastic flow were considered in the design of window-wall details, and adequate allowances or clearances were made for the various possible combinations of loads. The balance of the structure was analyzed on the basis of continuous slabs, girders and columns using the elastic theory.

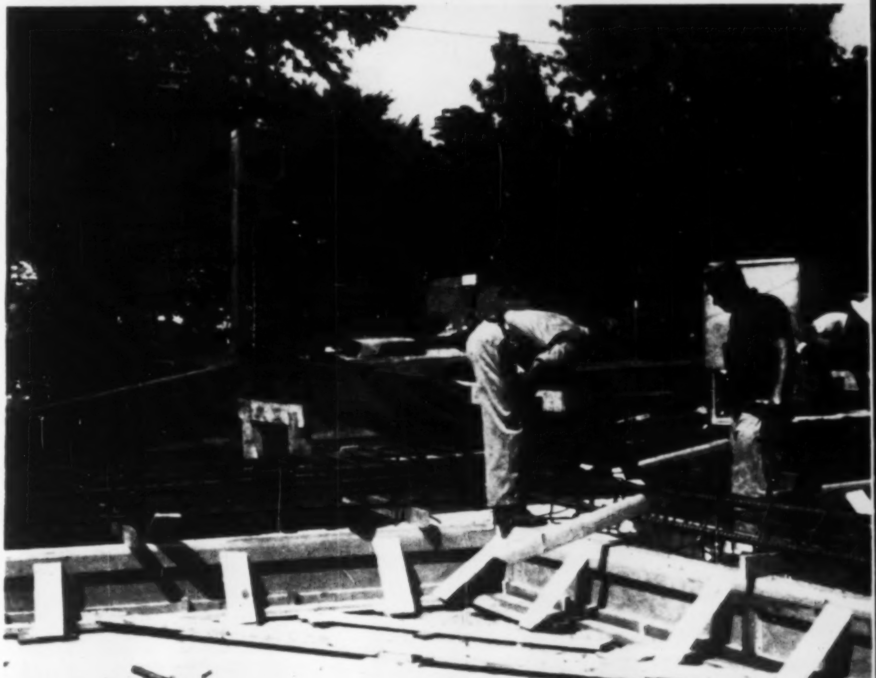
The designers believe that had the ultimate-load method been used member sizes could have been reduced. This would have resulted in an even more delicate appearance for the structure. However, the ultimate-load method is not yet as widely accepted by local codes and its advantages had to be passed up this time.

Authors Kenneth C. Naslund and Takao Nakashima are with Skidmore, Owings & Merrill, designers of the Grinnell College Library. Mr. Naslund is Chief Structural Engineer and Mr. Nakashima is Senior Structural Designer.



Reinforced T-frames were cast in removable timber forms.

Erection



T-frames were upended and cured in burlap.

• **Preconstruction conferences**—Fabrication and erection of the precast elements were carried out by the general contractor—the Weitz Co., Des Moines, Iowa.

The company sent its construction engineers to the Chicago office of Skidmore, Owings & Merrill to discuss fabrication, transportation and erection methods prior to the start of work. Many problems also were discussed by phone, and sketches were submitted for approval.

Success of the precast portion of this building can be attributed to close cooperation between contractor and architect-engineer in the development of construction procedure. As a result of the meetings, the method of fabricating the T-frames, beams and TT's, the curing method, and transportation and erection procedures were all decided. Midwest Concrete Industries, Des Moines, Iowa, produced the TT's under a subcontract.

• **Casting and curing**—The T-frames and beams were cast on their sides on concrete slab beds, away from the building site, with removable wood side forms. After reinforcing steel was prefabricated

4-D

WROUGHT IRON
STEAM RETURN LINES
NIP CORROSION
IN THE BUD

What steam condensate is:

Steam condensate is a hot distilled water with no hardness or mineral content to form a protective coating over metal surfaces. Non-condensable gases are immediately absorbed by the condensate, making it extremely corrosive.

What steam condensate does:

Depending upon the percentage of free CO_2 plus O_2 contained in the steam, the corrosive condensate may cause grooving, channeling, pitting, or actual penetration of the pipe wall. Build-up of insoluble products of corrosion may plug the pipe and render it useless.

How to combat steam condensate:

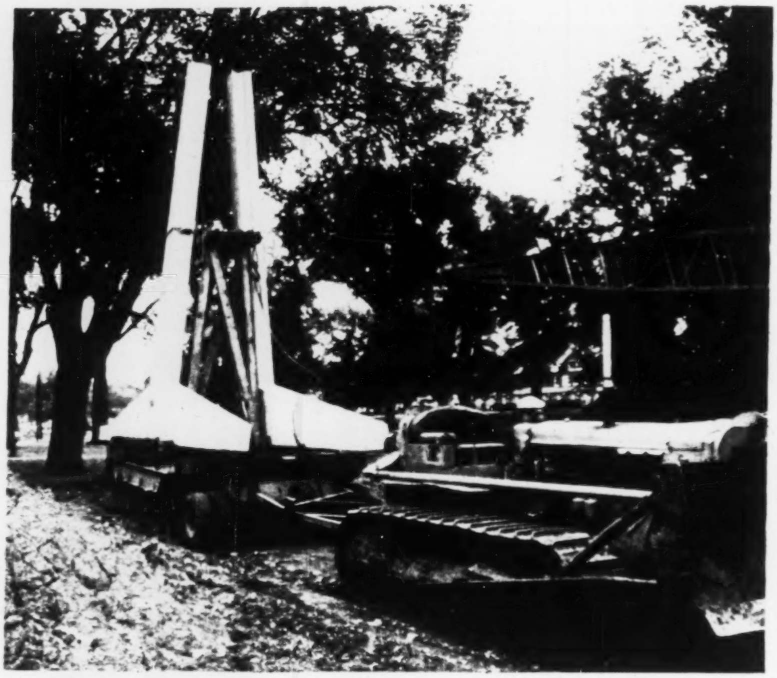
4-D Wrought Iron's corrosion-blocking film forms around the interior walls of condensate lines encouraging long, maintenance-free service. The high purity base metal, laced throughout with non-rusting glasslike iron silicate fibers, acts as a stubborn deterrent to condensate corrosion.

Write for Special Report on Steam Condensate Lines

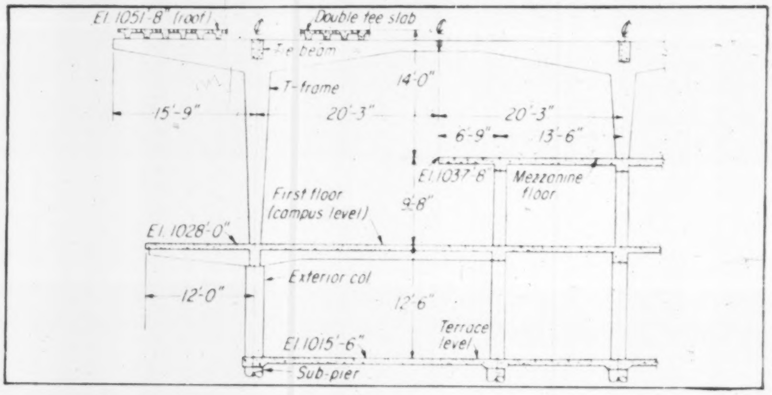
BYERS 4-D WROUGHT IRON

Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.



Tractor and low-bed trailers transported T-frames to site.



Section shows T-frames joined to form 40-ft-span bents.

and lowered into the forms, concrete was placed and vibrated.

When the concrete developed sufficient strength, the forms were removed. The precast unit was lifted out, placed upside down and allowed to cure. Curing was accomplished by wrapping the unit with wet burlap and covering with a polyethylene sheet. The large T-frames were transported by trailer pulled by a tractor. They were placed in an inverted position with blocking under the middle third of the haunched girder and leaning against a timber tower built on the center of the trailer.

• **Erection**—Erection was performed with a truck-mounted crane. Portions of the mezzanine and first floor framing were left out to permit erection of the precast units, with the crane operating in the center of the building. This eliminated the need for a much heavier crane with a longer reach.

The units were braced after erection by light adjustable-type, diagonal shores and horizontal struts. After the T-frames and tie beams were erected, the TT roof units were placed and masonry end walls built.

Insulating fill was placed on top of the TT's. Finally, precast, insulated filler panels were inserted at the ends of the TT's.

Skidmore, Owings & Merrill personnel associated with the project included James W. Hammond, partner-in-charge; Walter A. Netsch, Jr., chief of design; Jack D. Train, project manager; and Wesley V. Pipher, job captain.

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Complete with supplementary closed-circuit TV educational system, North Hagerstown, Maryland's new "TV High School" embodies the latest educational and design concepts. Like McLeod & Ferrara, architects, you'll find that the use of Truscon VISION-VENT® Window Walls is an ideal way to convert one such concept—that of exterior walls which provide added light, beauty, and economy—into a striking reality.

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PLEASING LINES, COLORS—Select practically any type of window—double-hung, architectural projected, intermediate projected, and many others. Trim, modern appearance. Choice of high-gloss panel colors for single- or multi-colored effects. Almost any desired arrangement of insulated panels; fixed or operating lights; side-hinged, inward or outward projecting ventilators. Choose either steel or aluminum.

IMMEDIATE AND LONG-TERM ECONOMY—Applied-skin type construction gives up to 5% more usable floor space, reduces weight on frame and foundation, permits fast erection even in foul weather. Specify factory-applied Supercoat on steel windows—actually a double coat of baked enamel. Superbly smooth, hard, and durable. Eliminates field painting of windows . . . staves off maintenance painting for years.

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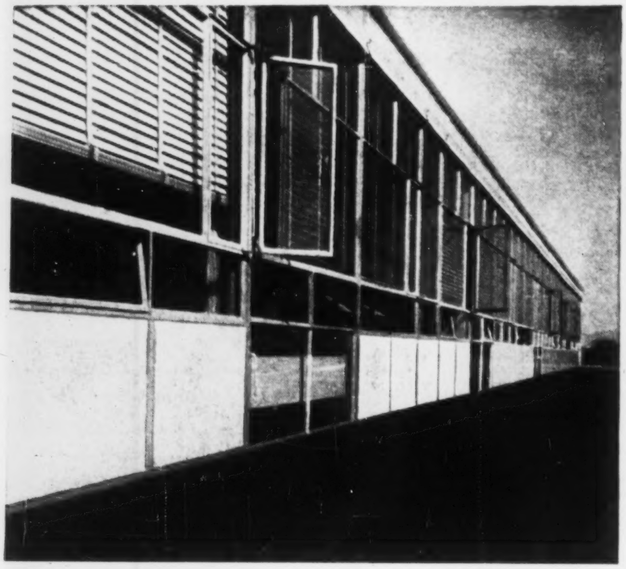
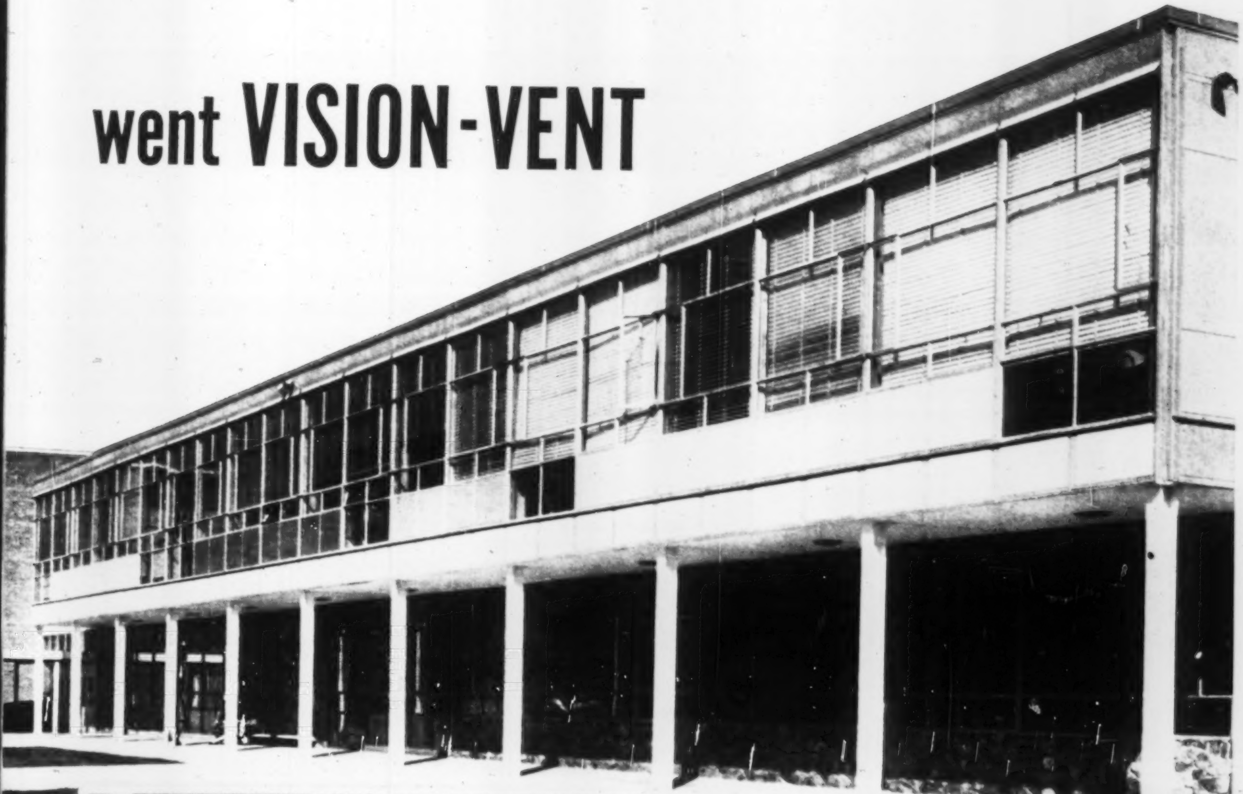


Cost of VISION-VENT Window Wall construction utilized by McLeod & Ferrara, Architects, compared favorably with any other type of construction considered. No other type, however, offered the combination of added light, beauty, durability, and complete flexibility of design.

Truscon "O-T" Open Truss Steel Joists® are employed exclusively in North Hagerstown's new high school. Joists are covered by acoustical ceilings in all but a few laboratories—such as the electronics lab seen above—where possible increases or changes in electrical systems will require complete accessibility. Send coupon for "O-T" Steel Joist details.

went VISION-VENT



Architects: McLeod & Ferrara, Washington, D.C.

These high-quality *Republic Steel Lockers* will be enjoyed by generations of North Hagerstown high school students. Designed and built by Republic's Berger Division to weather youthful exuberance. Bonderized to take and keep a finer enameled finish. New, improved handle. All locker sizes and styles. Complete planning, engineering, and installation service. Send coupon for complete information.

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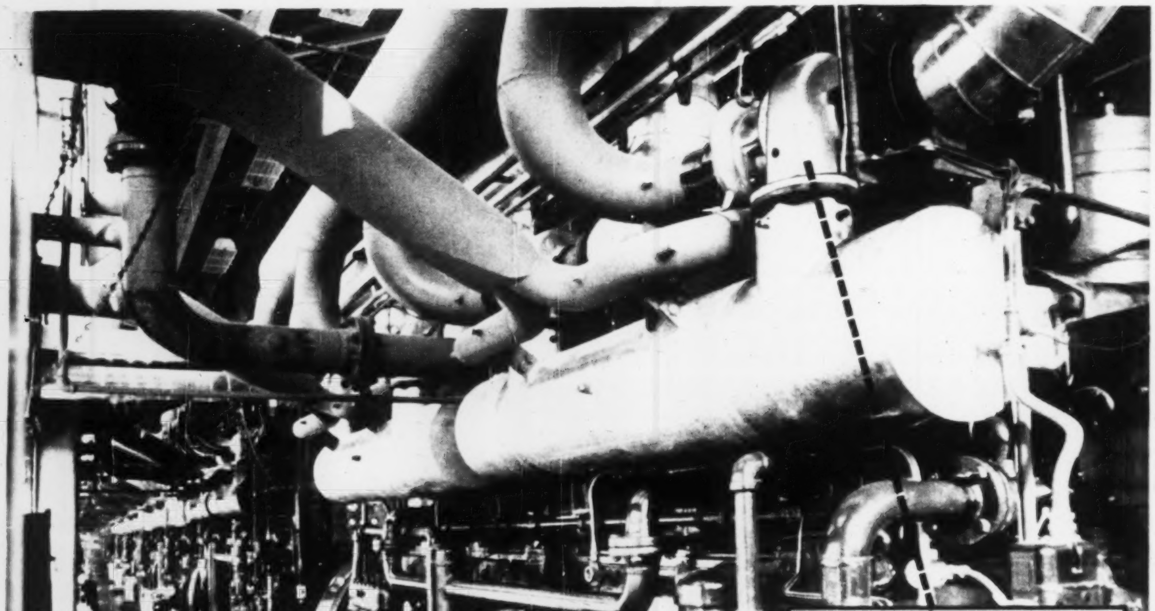
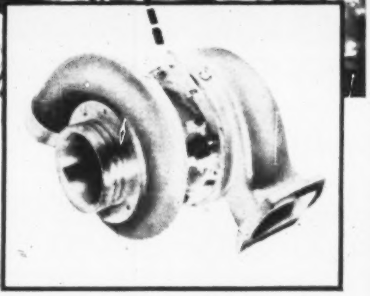


Six large engine compressors of a group of 15 now operating with four AiResearch turbochargers on each engine in Richfield Oil Corporation's pressure maintenance plant (Western Plant #21) at Coles Levee, California.



Four AiResearch T-30 Turbochargers on each engine.

Multiple-turbocharging Richfield's 2-cycle natural gas engine compressors

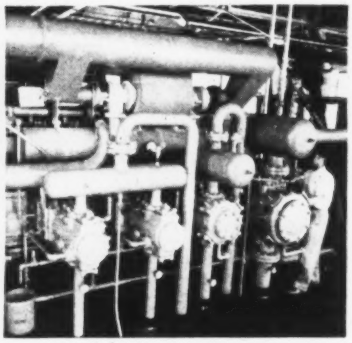
substantially increases plant capacity

The Multiple AIRESEARCH Turbocharger System has greatly increased power output at Richfield Oil Corporation's compressor stations quickly and most economically . . . thereby increasing the compressor capacity with the same personnel.

Increased engine thermal efficiency is achieved by four AiResearch turbochargers installed on each 2-cycle natural gas engine direct-connected compressor pictured above to produce up to 30-40% more horsepower depending on the model.

Identical production-type AiResearch turbochargers can be retrofitted on different size engines, mounted on the exhaust manifold . . . the compressed air directed to the engine intake through an AiResearch intercooler.

More than 30 Richfield compressors of various models will be turbocharged by AiResearch . . . another example of AiResearch world leadership in the development and production of air-cooled turbochargers and turbocharger controls for all major engine applications. Your inquiries are invited.



First AiResearch installation at Richfield's Coles Levee absorption plant on one of several compressors with two turbochargers . . . engines now in their third year of continuous trouble-free operation.

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NORTH
INTERSTATE
OKLAHOMA
35

Despite a tight budget, Oklahoma will complete over $100-million of Interstate roads by mid-1960.

How Oklahoma Fights Money Squeeze

Latest estimates place the cost of improving Oklahoma's state highway system at roughly $500 million. That is exclusive of its part of the Interstate Highway System, on which about $300 million will be spent in the next ten years.

But roadbuilding funds in Oklahoma are tight, and threaten to become tighter.

Oklahoma collects about $100 million annually in highway user taxes. The state highway department gets about 34% of these funds.

This year the department's total program calls for $42 million in state funds. But it stands to get only $35 million. Therefore field and office operations are being streamlined for speed and economy.

• Functional plans—One great time- and labor-saving innovation in streamlining the preparation of plans is the use of "functional plans." They are prepared under the direction of Burt McCaleb, chief of the road design department.

The functional plans are used to secure a mutual agreement with the U. S. Bureau of Public Roads—and with the counties, to some extent on the fundamental details of a project. They also simplify and speed the correlation of activities of other highway department divisions, such as planning, designing, field survey and right-of-way.

The functional plans include preliminary plan and profile sheets, and typical roadway sections. They show location and type of interchanges and grade separations, as well as property owners. Mass diagram or quantities are not shown. Data such as design speeds on main highways, local roads and interchange ramps are shown on the title sheet. Current and projected traffic volumes are also shown.

Field crews use the plans to make site investigations and to see that a proposed project meets BPR requirements. The plans are then submitted to BPR, with a request for a written report of approval.

Up to this point the highway department has not expended a great deal of engineering effort; so any changes required are not very costly.

After BPR approval, design and detail project plans are prepared. The functional plans are revised and corrected accordingly. They are then used by the right-of-way department. Since they are drawn to one-fourth the scale (200 ft to the inch) of the final plans, property ownership is shown more clearly.

• Computer section—Substantial savings in engineering manpower have been made during the last two years by the use of a Univac 120 electronic computer. The highway department leases it for $1,300 per month.

The computer section consists of four programmers and three key-punch operators, and is headed by Ben Steele. It programs and processes work through the electronic computer for all branches of the highway department, including the payroll section.

Basic programs being used include earthwork computations from the original cross-section data taken by survey crews, through various steps to the finished mass diagram. It is proving an especial time saver in correcting traverse surveys.

Another rich field of computer capabilities has been found in processing the large volume of data involved in research work. For example, one research problem contained 206,000 separate sets of data that had to be correlated. This would have taken years manually. It took only five weeks in the Univac section, without holding up regular operations.

In road design, the machine has been used to compile a complete set of tangent off-set radii tables varying from 4 min to 35 deg, using increments of 1 min. The off-sets are taken at 100-ft increments from 1 ft to 2,700 ft.

The electronic computer is also used in bridge design and geometry of skewed bridges on vertical or horizontal curves. Some programming is getting under way in the area of rigid-frame analysis.

(*Turn the page*)

TRI-LEVEL structures are sometimes necessary to eliminate grade crossings.

FOUR-SPAN continuous structures carry local roads over four-lane, divided highways.

Other uses in bridge plans include dead-load and live-load deflections and other design features of continuous I-beam spans.

• Standardized bridges—Short-span continuous-slab bridges are used extensively for highway grade separations where maximum span length does not exceed 60 ft. Four-span structures are usually used over four-lane divided highways, and three spans over single two-lane pavements.

For spans between 60 and 100 ft, continuous I-beam bridges with conventional cast-in-place concrete roadway slabs generally are used. Continuous welded plate girders are often used on highway separation where the center span is over 80 ft and the total length required is over 200 ft.

•Consulting engineers—Extensive use was made last year of consulting engineers most of whom are located in Oklahoma. They were engaged chiefly in the preparation of road and bridge designs, and field surveys. (Supervision of construction is always performed by state highway engineers.)

During the last six years the highway department has entered into 180 contracts with consulting engineer firms. This year, chances are the department will employ few consulting engineers since it has quite a backlog of road and bridge plans ready to be let.

Contract fees for consulting services are based on a percentage of the cost of construction. These fees are on a graduated scale ranging from 4.25% for projects costing less than $25,000 to a maximum of 2.5% for projects costing over $2 million.

• Engineering manpower—Like a number of other state highway departments, Oklahoma is on the lookout for promising engineers and technicians. It needs construction engineers of all classes. In general, it has not been able to attract as many college trained engineers as are needed.

Compared with neighboring states, the Oklahoma State Highway Department's salary scale is considered good. Monthly salaries range from $190 to $225 for a Class 1 draftsman, to a top of $615 for Class 7 draftsman. Engineer salaries range from $300 to $370 for Class 1 to a top monthly salary of $725 for a Class 5 engineer.

The bridge department still needs additional experienced designers, according to D. L. McCullough, bridge engineer. At present its staff includes eight graduate engineers with two to ten years experience.

• Long-range plan—During the 10-year period, 1961-1970, Oklahoma expects to spend $250 million on Interstate highway construction. Another $340 million will go for its ABC (primary, secondary and urban extensions) system.

During the 10-year program the department plans about $17 million a year on primary highways, $12 million on secondary routes, and $5 million a year on urban highway construction (figures include federal and state funds on a 50-50 matching basis).

Oklahoma has three Interstate highways totaling 790 miles. This includes 175 miles of toll highways.

Interstate Route (IS) 35 runs north-south 230 miles from Kansas to Texas. IS 40 runs east-west 328 miles from Arkansas to Texas. Both routes pass through the Oklahoma City area.

The third route, IS 44, extends from just north of Oklahoma City to the northeast corner of the state. It incorporates the 87-mile Turner Turnpike and the 88-mile Will Rogers Turnpike—both toll highways—and the 18-mile Tulsa bypass connection.

There is now $41 million worth of Interstate highway construction programmed but not let to contract, and about $7 million worth of federal and state funds allocated but not programmed.

By mid-1960, $140 million is expected to be spent on the three Interstate routes, exclusive of turnpike construction costs.

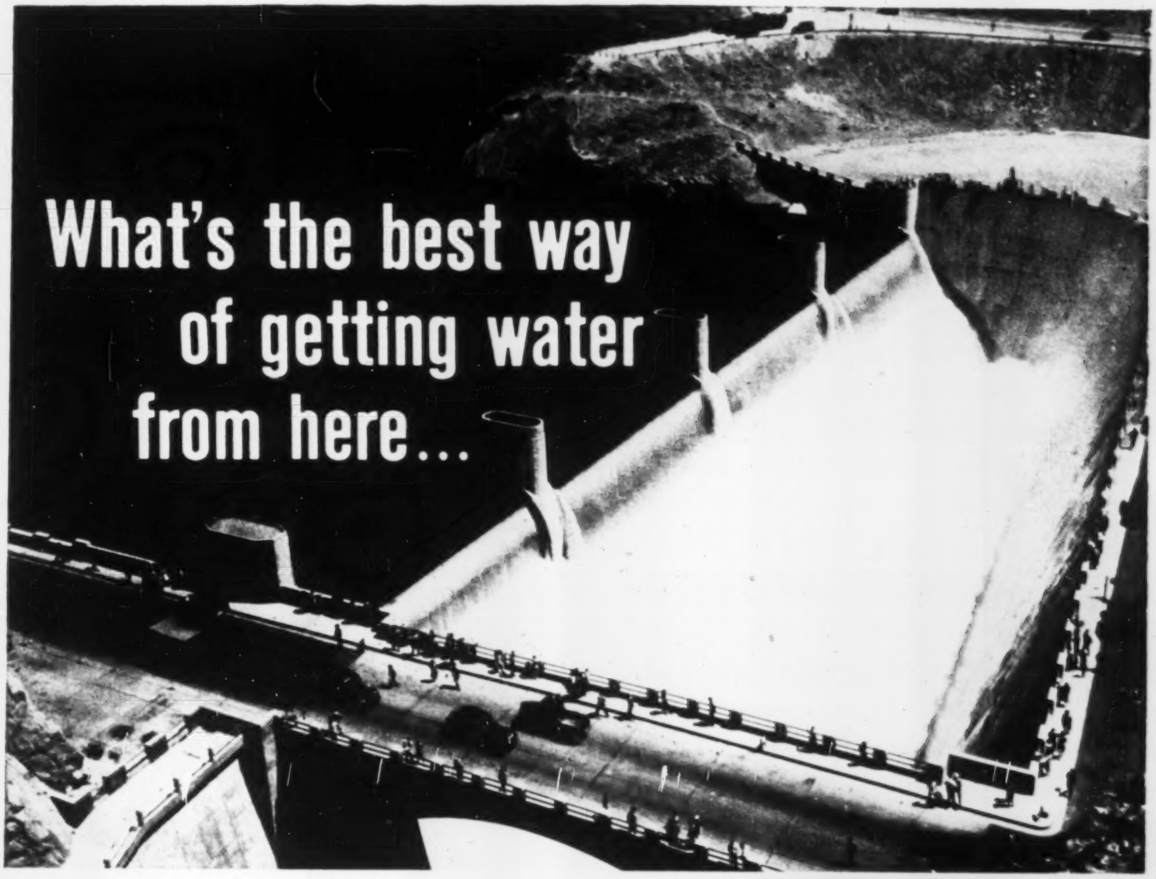
• Operating expenses — Maintenance costs, administration and other operating expenses take a sizable bite out of the department's annual income.

This year the department will spend about $7.5 million for administration, $9.5 million for routine maintenance, $6.6 million for special maintenance, $2 million for new equipment and $700,000 for consulting engineering services.

This adds up to $26.3 million for 1959. By 1970, this figure is expected to increase to about $53 million.

The highway department has about 2,500 full-time employees.

It is headed up by G. H. Bittle, chief engineer for the last eight years.


What's the best way
of getting water
from here...

to here?
(turn the page)

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Roadside installation of 8-inch mechanical joint cast iron pipe for gas utility main extension.

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Furthermore, more miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.

Yes, cast iron is always the favorite. A recent impartial survey showed that consulting engineers and water utility officials prefer cast iron pipe for underground water distribution by an overwhelming majority.

36-inch mechanical joint cast iron water main rerouted because of superhighway construction.

Section of 16-inch gas transmission main being installed through a new subdivision.

Municipal water improvement program included installation of 35,000 feet of 42-inch mechanical joint cast iron pipe (above) and 9280 feet of similar 30-inch pipe.

Supplemental water supply line for municipal water authority uses 13,500 feet of 16-inch pipe.

What are its advantages?

- LONG LIFE. The cast iron pipe you install today will be performing economically a hundred years from now.
- HIGH-CAPACITY FLOW. Cement-lined cast iron pipe will deliver the full-rated flow all through the years. No other pipe, size for size, can carry more water.
- CORROSION RESISTANCE. Long life proves it. Most water utilities are still using the first cast iron pipe they installed.
- GREAT BEAM STRENGTH. Cast iron pipe resists the effect of heavy traffic, shifting soils.
- TREMENDOUS LOAD RESISTANCE. Six-inch cast iron pipe (Class 150) withstands a load of nearly nine tons per foot!
- PRESSURE-TIGHT JOINTS. You have a complete choice of leakproof, easy-to-assemble joints. You need a minimum of tools and work crew.
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Designed and built by Port of New York Authority, Hangar 17 will shelter jet and propeller-driven giants of some of the world's great international airlines.

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Roebling's long interest and experience in suspended roofs and suspension systems of *all* kinds, puts us in the unique position of being able to work with you on any project involving these principles. We invite your inquiries on any phase or factor of suspended roofs. The data, applications and *experience* that we have accumulated will be shared with you to the fullest extent. Write Bridge Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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In West Germany

Water Control Moves Ahead

The Federal Republic of West Germany is preparing, both economically and administratively, to regain leadership in the protection of its water resources.

So says Edward J. Cleary, executive director and chief engineer of the Ohio River Valley Water Sanitation Commission, who returned from Germany this month.

Mr. Cleary is serving as consultant to West Germany's Federal Minister of Nuclear Energy and Water Economy, Seigfried Balke. The ministry is a new one and is charged, among other things, with coordination of all federal water supply and pollution control activities both on a national and international basis.

Following a month of discussions with local state and federal officials, as well as with industrial and citizen groups, Mr. Cleary listed these factors as favorable to future prospects in curbing water pollution:

- Greatly improved financial conditions for communities and industries.
- A well established system of state subsidies (which defray one-third the cost of community sewage disposal facilities); and a federal rapid-tax amortization privilege, which was established in 1955 to provide incentive to industries for building control facilities.
- Hopefulness on the part of state governments that overlapping jurisdictions of existing federal agencies will ultimately be coordinated in the new Ministry of Water Economy.
- Adoption by the federal parliament of a framework or model law on water resources. This establishes basic principles of state ownership of all water and the ultimate abolishment of a complex system of water rights. Each of the states in the Federal Republic is required to complete the re-writing of their water laws by March, 1960.

Although there is much concern in official and professional circles about the degradation of rivers by pollution, public opinion has not yet made itself felt, Mr. Cleary reports.

However, a German Water Protection Society has been organized and is attempting a program of public education. Members of the society include sporting, camping, hiking, agricultural and other citizen interests. There is considerable feeling both officially and privately that industries have taken advantage of their favored position during the reconstruction period and have not properly met their waste-control responsibilities, says Mr. Cleary.

Ed Cleary Reports on West Germany.

Brightest spot he finds in the pollution control picture is the water quality program of the Ruhr Valley River Boards. Some of them have been operating for 50 years. They provide an unparalleled example of democratic representation, scientific skill and economic astuteness in securing maximum utilization from limited water resources, he says.

Mr. Cleary was questioned at length on the organization and operation of the eight-state Ohio River Valley Compact Commission during a meeting of the International Commission on the Rhine River. Delegates from Switzerland, France, Luxembourg, Germany and Holland believe this pattern of interstate cooperation has some applications in extending activities of the five nation group.

Mexico to Build Bridges To Replace Jungle Ferries

Mexico's Department of Public Works has begun a $2.5-million program to equip some of the nation's important jungle roads with bridges.

In many parts of Mexico newly paved roads in jungle areas come to an abrupt halt at rivers. Ferry boats are used to take automobiles and trucks across.

The new program calls for the installation of 43 bridges on 17 national highways. By December, 33 of the spans will be finished.

(*International continued p. 48*)

4D

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Write for technical data on specific applications

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- Curing Compounds.
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ASPHALT EXPANSION JOINTS

SEALTIGHT Premoulded Asphalt Expansion Joints have been in general use for more than 30 years. They provide initial low cost and durability. Entirely waterproof and rigid, they are highly recommended for most every joint installation. Furnished in cut sizes or slabs. Meets A.A.S.H.O. Spec. M-33-49 (also 42 and 48), A.S.T.M. Spec. D-994-53-T, U. S. Navy Dept. 4-Y-D and 13-Y-C, and all State and Federal Specifications.

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New Zealand City Raises Building Height Limits

Pressure to build up has reached Wellington, New Zealand, where a 14-story office building will rise 153 ft. Permission to exceed the previous limit of 99 ft was granted with two controls:

- Total occupancy in the new building must not exceed the number of persons allowed in a hypothetical building that would cover the entire site and rise only to the original limit.
- Building setbacks must conform to the "angle of light" method, determined by the width of streets surrounding the building.

The $2.3-million structure, built for Shell Oil Co., will provide 116,000 sq ft of air conditioned office space.

Using off-site prefabrication wherever possible, the architects hope to have the building completed, just 85 weeks after first work started. The building will have a reinforced concrete core surrounded by a steel frame; precast concrete plans, 18 in. wide and 9 ft long, will form all superstructure floors. Precast, lightweight plaster castings will fireproof the floor beams.

Outside, polished aluminum and colored glass curtain walls will cover the upper floors; lower floors and all columns will be sheathed in precast concrete panels.

Stephenson & Turner of Wellington, N. Z., are the architects-engineers.

Chinese Sprinkle Coal Dust To Melt Mountain Snow

Peking Radio says the Red Chinese are trying to get more snow to melt in the Kilien Mountains, Northwestern China. The Chinese want the water to irrigate farmlands in the valleys.

Caravans of camels, yaks and horses are reportedly plodding up the snow-capped mountains carrying 3,000 scientists and workers plus tents, instruments, tools, radio gear and supplies. The party will move into an area nearly 15,000 feet above sea level.

For two months after they reach the area men and airplanes will spread black materials—mainly coal dust and burned grass and wood—on the ice. This is an effort to increase the absorption rate of heat from sunshine and thus speed the melting of the snow and ice. The expedition will also bomb strategic spots in the glacial flow.

Work on the project began last June when a meteorological mission of the Chinese Academy of Sciences found that only about one fortieth of the total snow in the mountains melts annually.

The group will try artificial melting in a seven-square-mile test area.

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Steel buyers everywhere know Levinson's reputation for having steel on hand . . . and for "fabrication that fits."

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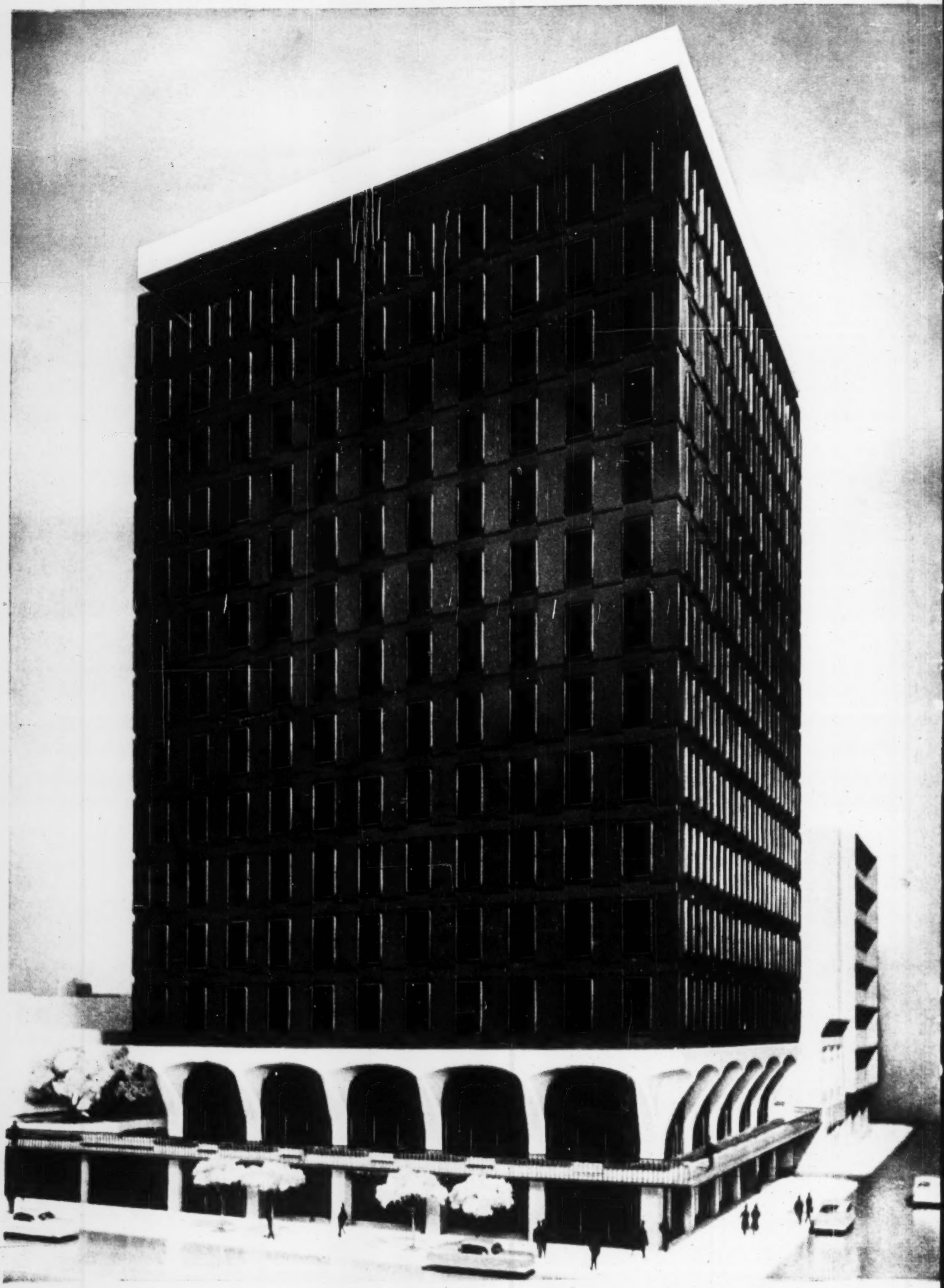

NEW BRONZE BEAUTY BY THE GOLDEN GATE

New San Francisco Western Home Office of John Hancock Life features functional use of Chase® Architectural Bronze

The John Hancock Mutual Life Insurance Company wanted a new warmth, beauty and elegance in their Western Home Office building. They turned to the beauty of bronze.

Each of the 528 window frames for the new building is of Chase® Bronze… special architectural shapes for frames and glass stops that hold the hundreds of panes in place. These interlocking elements require tolerances which are measured to thousandths of an inch.

Bronze has other important uses. An all-bronze railing encircles two sides of the building at the second floor. Window flashings are Chase copper. When this new 15-story building is occupied in the fall, the functional use of Chase bronze will add new beauty and distinction to the downtown skyline in San Francisco.

Call your nearest Chase office, or write Chase at Waterbury 20, Conn. for the help of expert Chase metallurgists.

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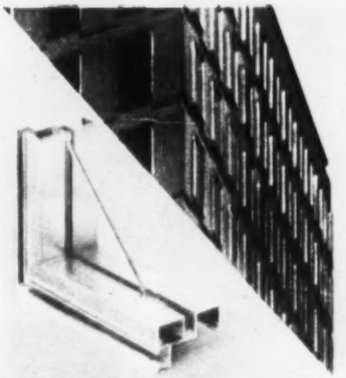
JOHN HANCOCK BUILDING

WINDOWS and exterior trim on all floors of the new Hancock building feature the use of Chase Architectural Bronze Shapes, made to tolerances of thousandths of an inch. Bronze adds warmth, beauty and elegance to the building.



BALCONY around two sides of building has a beautiful bronze railing made of Chase Architectural Bronze. This feature adds beauty to the new building now under construction at California and Battery Streets in San Francisco.

"Nothing takes the gambling out of building like *TORQMATIC DRIVE*"

Little wonder so many contractors refuse to take chances on any other make automatic drive. They know how Torqmatic's *proved* performance — in more than 10 years of tough, on-the-job use — really pays off.

In ankle-deep mud, for example, Torqmatic equipment doesn't bog down, its wheels spinning. On tough grades, it keeps climbing where stick-shift haulers falter. And more nimble Torqmatic earthmovers and dumps meet tighter schedules by handling more trips a day.

What's more, Torqmatic rigs have exceptional staying power. They need no pampering — have amazingly few repair needs. It's one big reason for rock-bottom operating figures that make a Torqmatic-handled job more profitable.

Reason enough, then, for making your next new equipment Torqmatic equipment. It's *the hydraulic drive that's outproved all others*. And it's available in almost every make and model equipment you can use. See your dealer — or write:

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THE MODERN DRIVE FOR MODERN EQUIPMENT

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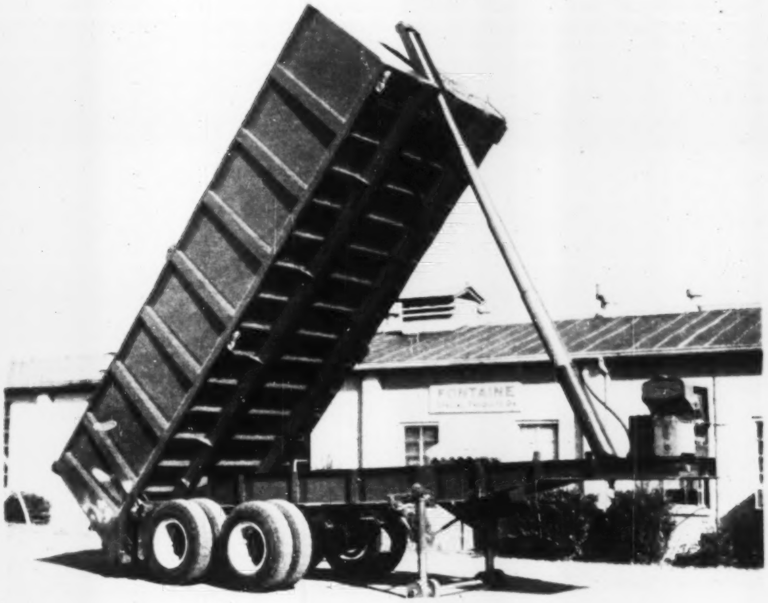

Dump Trailer Has Power Unit

A 30-cu yd dump trailer, designed for use with any conventional tractor, is raised by a front-mount telescopic hoist. The hoist, which has a 50,000-lb capacity, is powered by a gasoline engine mounted on the front of the trailer chassis.

The power unit is self sufficient in operation, containing a battery, electrical starter and generator. This eliminates the need for hydraulic lines and electrical connections between tractor and trailer.

The body of the trailer is built of eight-gage steel. Its inside dimensions are 23 ft long, 7 ft 2 in. wide and 4 ft 2 in. high.

The 30-yd unit is available with either single or twin hoisting cylinders and with single or tandem axles. Fontaine Truck Equipment Co., 1232 37th Place N., Birmingham, Ala.

Drilling Rig Fits Crawlers

A tractor-mounted drill, the B-40 Explorer, is set on any wide-gage TD-6 or TD-9 crawler.

The self-contained drill is designed to be used for diamond drilling in hard rock. It can operate down to a depth of 250 ft, through a drilling speed range from 50 to 600 rpm, the manufacturer says.

The Explorer is said to be equally effective as an auger drill in semi-consolidated material. Five-foot continuous flight sections auger down to 75 ft in clay or gravel, with augers 4½-in. in diameter.

In traveling, the drill frame and tower are lowered. Other features include a folding frame for drilling at any angle from vertical to horizontal and 68-in. stroke. International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

4-D

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- meets building code requirements
- resists shock and vibration
- saves space as Durham system
- long random lengths available
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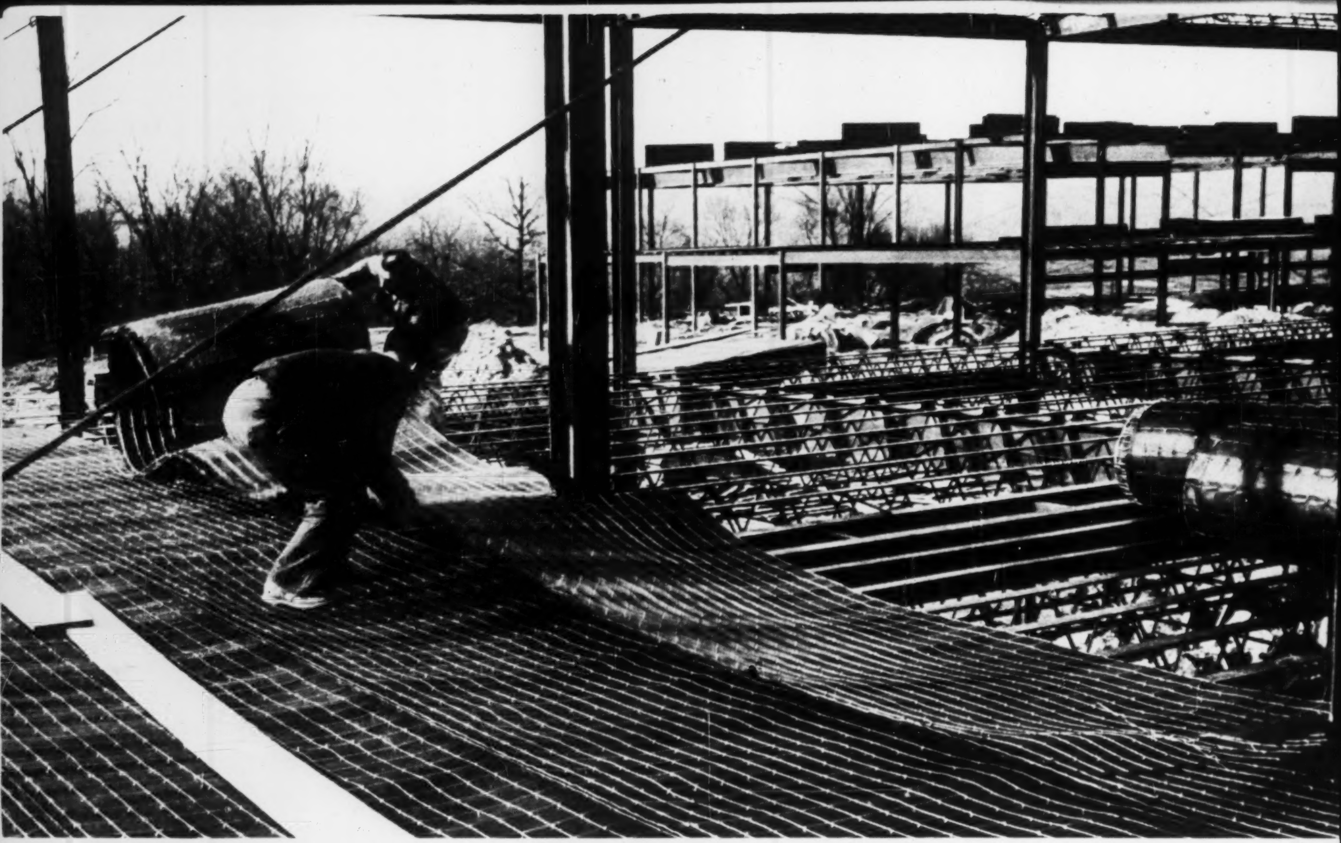
- fewer hangers needed
- less labor expended
- leak-proof sanitary joints
- no internal flaking, clogging
- low cost per year of service

Write for technical data on specific applications

BYERS 4-D WROUGHT IRON

Tubular and Flat Rolled Products

A. M. Byers Co., Pittsburgh 22, Pa.



Quickly, easily Steeltex goes down at superbly designed Canevin High School, Pittsburgh, where 60,000 square feet of Steeltex support concrete floor slabs. Architect: Celli-Flynn, McKeesport, Pa. Contractor: Navarro Corp., Pittsburgh. Steeltex from Pittsburgh Steel Co. was specially commended for its installation features on this project.

Architect, Contractor Find . . .

Steeltex Saves 35 Cents per Square Foot

"I estimate we saved about 35 cents per square foot by using Steeltex instead of another material on the Baptist Hospital addition in Pensacola. Steeltex' quick installation also helped us meet our construction timetable easily."

Man speaking: President Raymond C. Dyson of Dyson and Company, Pensacola, Fla., general contractors.

Job: $1\frac{3}{4}$-million addition to Baptist Hospital. Here, Pittsburgh Steel Company supplied 70,000 square feet of Steeltex, the waterproofed, paper-backed wire mesh reinforcing used in the concrete floors and roof slabs.

Like Mr. Dyson, Architect Charles H. McCauley has used Steeltex for more than 20 years. He, too, knows Steeltex helps provide better construction at lower costs.

"I specified 100,000 square feet of Steeltex when the main hospital building was erected eight years ago," said Mr. McCauley. "Naturally, I specified it again when the addition was built. I think this shows I am enthusiastic about the qualities of Steeltex."

• Cost 30-40 Percent Less—Similar comments came from Cleveland where Architect Eugene W. Gray and Contractor William Passalacqua were responsible for constructing the new $600,000 Child Welfare Division Building.

Mr. Gray and O. E. Kronenwetter, chief engineer for Passalacqua Builders, estimated that 30,000 square feet of Steeltex in floor slabs cost 30 to 40 percent less than methods generally specified.

• On Pittsburgh Job—When Steeltex was combined with Pittsburgh Steel's wire mesh to support 60,000 square feet of concrete floor slabs at Canevin High School in Pittsburgh, Steeltex was specially commended for its installation features.

Joseph V. Cutuly, job superintendent for the general contractor, Navarro Corporation of Pittsburgh, likes Steeltex because "it takes more punishment during installation than a sheet metal, goes down faster and is much easier to handle."

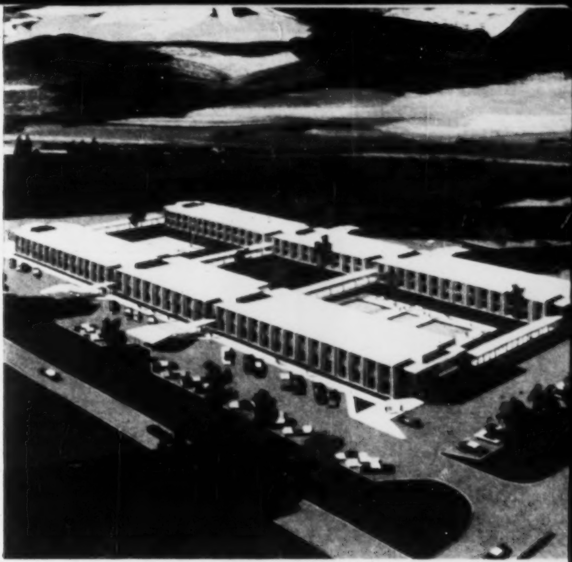
Dean Regan, foreman of the crew that installed Steeltex in the $2\frac{1}{2}$-million building, has used Steeltex on more than 55 jobs in ten years.

"Steeltex is very easy to install. Just unroll it, cut, tighten and clip," he said.

• Makes Stronger Slab—William B. Tabler of New York City, architect for the $2\frac{1}{2}$-million Hilton Inn at the San Francisco Airport where 65,000 square feet of Steeltex supports the floors, pointed out additional Steeltex features. Said Mr. Tabler:

"Steeltex retains moisture and cement to a greater degree than lath. This makes a cleaner job. Also, the sag from the concrete cradled in the Steeltex gives additional lateral resistance which aids earthquake construction."

Snug fit of Steeltex around drain pipe at Canevin High School is shown by Joseph V. Cutuly, job superintendent (l.), and Foreman Dean Regan. Mr. Cutuly says, "Steeltex takes more punishment during installation than a sheet material, goes down faster and is much easier to handle."



At luxurious Hilton Inn, San Francisco Airport, 65,000 square feet of Steeltex in floor slabs aid earthquake construction. Architect: William B. Tabler, New York City. Contractor: Cahill Construction Co., San Francisco.

• **New Users Like Steeltex**—Steeltex also is endorsed by new users such as the architectural firm of Charles Bacon Rowley and Associates, Inc., and Ernst Payer, and Contractor Albert M. Higley Company, both of Cleveland. They teamed up on building the $805,000 Western Reserve Historical Society Museum in their city.

Superintendent Albert M. Higley Jr. estimated "perhaps a four percent savings was realized by using 11,500 square feet of Steeltex instead of placing conventional roof structures."

• **Will Use Again**—Another satisfied new user is Irving D. Robinson, architect for the new $325,000 Luria Brothers Building in Cleveland.

Mr. Robinson said: "This is the first time I specified Steeltex and I am sure I will use it many times again. Steeltex permitted work to continue on the floors without planking or scaffolding, although the concrete slab was not poured for many weeks after the 12,000 square feet of Steeltex were installed." Contractor for the job was J. L. Hunting Company, Cleveland.

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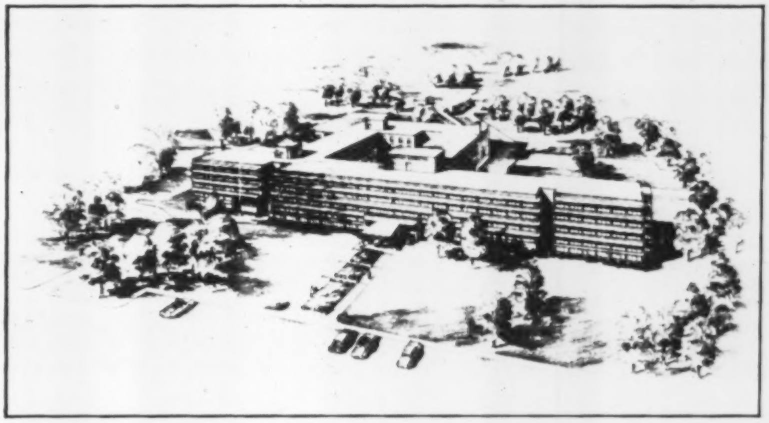

$24,500 was saved on cost of material and labor by using 70,000 square feet of Steeltex in the Baptist Hospital addition in Pensacola. Architect: Charles H. McCauley, Birmingham. Contractor: Dyson and Company, Pensacola.

▶ **See Sweets Catalog Section 2-B**

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D. B. Steinman: He knew what he wanted.

"There were many disappointments . . ."

"But life's been too wonderful . . ."

"I'm through fighting."

What Measure for This Man?

"The world makes way for the man who knows what he wants," says David Barnard Steinman, "provided he is willing to make the necessary sacrifices."

Last week, the world saw 73-year-old Dr. Steinman—many sacrifices behind him—honored anew by the National Society of Professional Engineers for his work in founding it (see p. 23).

For this designer of many notable bridges, this latest honor—heaped upon others—was received with the same apparent joy that his first public recognition must have brought decades ago.

For Steinman the scientist, mathematician and engineer, life has been full—full of disappointments and frustrations as well as of recognition and financial rewards.

For Steinman the author, poet and humanitarian, the rich rewards of accomplishment still abound.

Recognition, he has sought and found. The world did, indeed, make way for the poor but brilliant youngster from New York City's lower east side.

Sacrifices he has faced and made. None leaves any outward mark of bitterness; all are recalled with apparent equanimity.

The great disappointment of his life has been denial of what he calls "the focus of my life ambition." His dream project, the Narrows Bridge in New York City, is now being engineered by others. The ambitious young Steinman began designing that record span suspension bridge in 1926, and spent 30 years promoting it. His effort was sacrificed.

But loss of affection among contemporaries may be the greatest of his sacrifices, for D. B. Steinman's personality has not been one to take or leave. He has made enemies as well as friends, and he is a man who wants very much to make friends.

The Steinman story has been written again and again. It is down in bare facts as one solid page of Who's Who in Engineering (in fact, it spills over three lines into a second page). Elsewhere, it piles up in the millions of words of biographers, citation writers, journalists—and of the man himself.

But what does it add up to? What will his contemporaries remember him for? What has been his most significant, lasting contribution?

Would it be the mighty Mackinac

. . . "I put off earnings for fighting

Bridge, longest suspension bridge from anchorage to anchorage in the world? Would it be Brazil's Florianopolis Bridge, built back in the Twenties and still South America's outstanding suspension span? Would it be his Europe-to-Asia bridge soon to be constructed across the Bosporous in Turkey?

Would it be "The Builders of the Bridge," his book on John and Washington Roebling and that boyhood inspiration of his, the Brooklyn Bridge, which they built? This labor of love was written at considerable sacrifice of time and effort, but the 65,000 copies already sold have taken its author's name around the world. It was published in German last year.

His book for juveniles, "Famous Bridges of the World," may be a part of his contribution, and so might be his paperback, "Bridges and Their Builders." "I Built a Bridge—and Other Poems" or his forthcoming volume of poetry, "Song of a Bridge Builder" or books being published about him, "The Long Crossing" or "Highways Over Broad Waters," might give some hint to his real contribution. But what is it?

"I count NSPE one of the achievements of my life," he says. But is this national society of 50,000 professional engineers—he called 24 men together to found it 25 years ago today—his real contribution? Or will he be remembered for the tireless efforts in the years after 1934 as he personally campaigned up, down and across the country for passage of professional engineering registration laws, for formation and strengthening of state societies and for their members to join his NSPE?

"In depression years," he recalls, "I gave 99% of my energies . . . neglected my practice . . . gave time, money, secretarial help . . . traveled thousands of miles preaching the gospel to engineers and legislative leaders. I made enemies, but got enough friends to push the movement ahead." Is this the Steinman effort for which friends and enemies alike will remember him?

Or was it another speech-making campaign when he barnstormed the country a bit later? He told and demonstrated how and why the Tacoma Narrows Bridge became unstable in the wind, tore itself apart and earned the name of "Galloping Gertie." To this day he says, in a matter-of-fact way, that he "could have saved the Tacoma Narrows Bridge."

However valid, this claim did not and does not endear him to contemporaries who had a part in the investigation of this historic bridge collapse. Nor, apparently, did they endear themselves to him. As he recalls, he had to fight to get papers published on his methods of design to avoid aerodynamic instability in suspension bridges.

"All my competitors were on a committee to investigate the collapse and I was scrupulously left out," he says. "Channels of information were closed to me—and channels of publication." It's said somewhat sadly, but unexcitedly and without bitterness. The Doctor's doctor told him to avoid arguments after heart trouble six years ago. He's "through fighting."

But was his work on the aerodynamics of bridge design his major contribution? He says his writings when finally published were attacked. Was he ahead of his time in this area?

A structural problem he faced and helped solve in 1929 may have helped distinguish him. On the Mt. Hope Bridge in Rhode Island, heat-treated wire was used in the suspension cables for the first time. It was nearing completion (and the Ambassador Bridge in Detroit was well-started using the same wire) when many strands were found breaking at the strand shoe in one anchorage.

Work was halted. Both bridges were dismantled and rebuilt using the usual cold-drawn wire; and Designer Steinman distinguished himself by helping to record fully and promptly the findings of this unfortunate experience.

How should his activities or membership in 155 different organizations (many honorary) be used as a measure of this man? Besides NSPE, he was president of the nearly forgotten, but still-surviving American Association of Engineers, president and founder of the American Toll Bridge Association, chairman of the U. S. Council of the International Association of Bridge and Structural Engineers, president of the International Society of Professional Engineers (Paris). Beyond this his associations are too numerous to mention.

And so are his honors. The honorary degrees now total 20—plus his earned B.S., A.M., C.E. and Ph.D. The miscellaneous medals, citations and awards seem innumerable.

The youngster who attended the College of the City of New York at age 13, while also attending high school classes at night, graduated in 1906 summa cum laude.

But will his great capacity for association work, his uncounted awards of recognition or the fact that he was a prodigy who became the "youngest professor in the country" at the University

4-D

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A. M. Byers Co., Pittsburgh 22, Pa.

causes," says D. B. Steinman

of Idaho in 1910 figure prominently in his contribution?

Or will his great contribution be the poetry, which he began writing as a hobby some eight years ago? Inspired, by those who told him his bridges were poems, he "decided" to take the next step" and has already accumulated about 60 awards for his poetry.

His relationship to his employees might be an outstanding facet of "The Doctor." They call him generous, thoughtful, receptive, ethical, quixotic, brilliant, warm, human, a team man and character-builder. Says he, "All the men are my brother engineers."

His firm now runs easily without him as he takes a much less active part. His chief associates, all with him many years, divide the projects among themselves (or join forces for a big job such as Mackinac) and work as fairly independent operators.

He says his practice barely broke even most years until the Fifties. "I put off earnings for fighting causes," he says. But today it runs much better, readily covering a million-and-a-half in operating costs annually and returning a good profit.

Maybe his methods of promoting professional engagements were a contribution. He would do considerable engineering on a proposed bridge in hopes of some day getting to design it in detail and see it built. There is a printed list of projects on which he has worked. It includes a category of 41 "proposed" bridges. The Narrows Bridge, of course, is among them.

It's hard to say how many of his claimed 440 bridges assignments he personally promoted for his office. In recent years he has had others on his staff to seek business. But in the Twenties he traveled the country locating sites for prospective toll bridges. His competitors have found him "everywhere" as they and he have traveled in the quest for engagements over the years.

He says he found it difficult getting work in from state highway departments. "I didn't know and don't want to know the political ropes."

Will his David B. Steinman Foundation distinguish him? Through it, he has given $400,000 to educational institutions, including 30 major schools. His money encourages teaching of the arts as well as engineering through visiting poet services set up at four universities. A grateful St. Lawrence University has set up an annual D. B. Steinman Festival of the Arts. He has always preached the well-rounded personality for engineers.

His 24 books, his poems, his lectures, his bridges, his frequent thoughtful words or letters of encouragement or congratulations to friends or mere acquaintances—all these things bring him fan mail from around the world. School children sometimes make it a class project to write him. "The mail that thrills the most is from the children," he says.

Is this some of the measure of the man?

Perhaps so.

Perhaps his greatest contribution will some day be judged to be his public relations effort.

Perhaps his success in identifying himself with civil engineering, and engineering in general, has been his greatest accomplishment. For in this role, which is criticized by many, he has made himself and engineering known to the public.

Who has done more in this regard? Herbert Hoover? The late Charles Kettering?

For a lifetime, D. B. Steinman has identified himself with his profession and labored for it. He identified himself, indeed integrated himself, with his profession so thoroughly that it would be difficult to say what effort he puts forth for self and which for his profession. He and his critics may have views 180 degrees apart on this, but few would deny both he and the profession have gained by his effort. As he says, "No true effort is ever wasted," and his efforts never cease—whatever his project of the moment.

His "publicity" is a veritable snowstorm, giving shivers to those fellow professionals who frown on such endeavors.

His apparent need for the security of ego-satisfaction is a predominant facet of the infinitely complex Steinman personality and another feature irksome to many contemporaries.

Editorial offices for years have been on the receiving end of the Steinman mail—poems, itineraries, news releases, pictures. Said one ex-editor last week, "one out of one hundred was usable." Said another editor and admirer of the man, "I've thrown a lot of Steinman stuff in this circular file (his waste basket), but I wouldn't put Steinman there."

One long-time associate of his said it well when he called David B. Steinman simply the "interpreter of his profession to the public."

This, perhaps, has been his major role, the one for which he'll be remembered.

4D

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- submarine cables
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- bridge structures
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- no internal flaking or clogging
- impact resistance
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- all pipe sizes available
- long random lengths available
- fewer joints necessary
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CONTRACTOR *Frederick J. Gallagher, F. J. Gallagher Trenching Co., Tucson, Arizona says—*
"By using Transite Pressure Pipe, we completed this 70,000-ft. water system contract several weeks faster than we had estimated. Transite's ease of assembly keeps our time and labor costs low. We excavate, install the pipe, and button up the trench fast. This speed is especially advantageous when we encounter cross service lines or are faced with bad weather. And always important, it means less annoyance to our own townspeople and the local merchants."

MAYOR *James L. Gardner, Wichita, Kansas says—*
"Every year—we actively go after new business . . . seek new firms to locate in Wichita to create job and business opportunities for our citizens. These new firms need water—and never fail to ask about our water system . . . which is one of the most efficient systems anywhere in the world. Part of its efficiency is made possible by Johns-Manville Transite Pipe which we have been using for many years."

ENGINEER *Leigh O. Gardner, Yost and Gardner, Engineers, Phoenix, Arizona says—*
"Transite has many advantages contributing to its economy. Its light weight, handleability and easy-to-join Ring-Tite Coupling keep our clients' final costs low. We find a continuing economy of operation throughout its long life. We have excavated lengths of Transite after 20 years of service and have found no sign of tuberculation . . . the smooth inside walls proving it still has low coefficient of friction and therefore highest carrying capacity."

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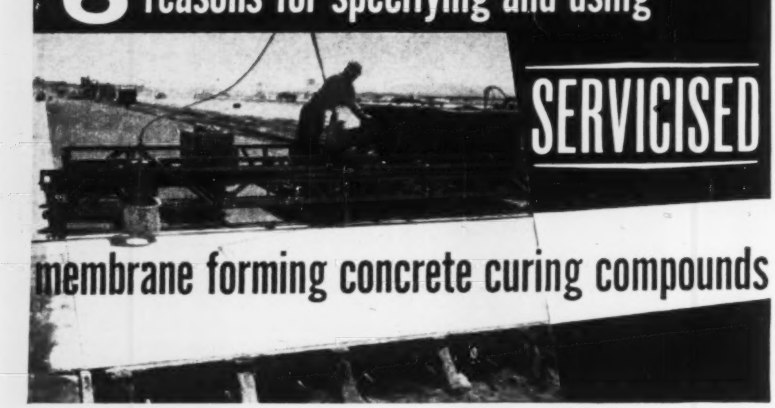

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Obituaries

Noted New York Architect Sylvan Bien Dies

Sylvan Bien, 66, an architect who designed many New York office skyscrapers, hotel and apartment buildings is dead. He was associated with his son Robert L. Bien in the architectural firm that bears their names.

Mr. Bien helped draw plans for more than 100 buildings in New York City. Among them were the Carlyle and Beverly Hotels, the Grolier office building, the Coliseum Park Apartments and Schwab House. One of the city's first aluminum-clad buildings, 655 Madison Ave., was built from his plan in 1950.

He had several buildings under construction at the time of his death. These include Stewart house, Henderson House, Gracie Towers and the Crum and Forster building in the downtown financial district.

Mr. Bien came to New York in 1916 from San Francisco. On the West Coast he had assisted in designing the Panama-Pacific Exposition.

Between 1919 and 1923 he was with Warren & Wetmore as a designer. In the 1930's and 40's he built apartment buildings and public housing projects.

During World War II, Mr. Bien designed air base facilities for the Army Air Forces overseas.

Jamison Vawter, 70, professor emeritus of civil engineering, University of Illinois. A graduate of the University of Kansas, he had been on the Illinois faculty since 1922. He was co-author of two texts: THEORY OF SIMPLE STRUCTURES AND ELEMENTARY DESIGN OF FLEXURAL MEMBERS. From 1953 to 1955, Professor Vawter was Grand President of Theta Tau engineering fraternity.

Donald R. Parker, 59, a civil engineer for 39 years, in Dallas. He was employed by the Arkansas Business Development Corp.

Lewis Mallory, 75, retired assistant highway bridge engineer of the Georgia State Highway Department. Before joining the department in 1938 he was a member of the consulting firm of Mallory & Nash.

August C. Habeck, 90, a building contractor in Milwaukee, Wis. By the time of his retirement in 1945 he had been active in the field for 50 years.

Arthur D. Stevens, 65, an engineer for the Ohio Highway Department, in Cleveland. He had been an engineer for the city of Cleveland.

Lima, Ohio, Adds Water Storage

Contracts for earthfill reservoir and concrete mains average $151 per mg of added capacity

To increase its existing raw water storage capacity from 2,600 to 4,600 mg, Lima, Ohio has awarded two contracts totaling $1,030,427, $694,207 for the reservoir, $336,220 for supply mains. This averages a cost of $515.21/mg of added capacity. Buck, Seifert & Jost, New York City, is the consultant.

The contractors are:

	Amount	% of Total
Miller Bros., Inc., Archbold, O. Sect. A. Reservoir & Appurtenances	$694,207	67.4
Porter Contracting Co., Hinsdale, Ill. Sect. B. Transmission, inlet and outlet mains	336,220	32.6

The reservoir will be formed by earth embankments and adjoining reservoir. It will be supplied from the existing pump stations now supplying Lima's four other reservoirs, will have a capacity of 2,000 mg, a maximum water depth of 50 ft, average depth of 20 ft, and surface area of 300 acres.

Bids were taken on alternate top elevations of 925, 920, 915 and 910 ft for embankment, with the award going to 925 ft alternate. The contract includes also clearing and grubbing, earth excavation, fill and blanketing, riprap, sodding and seeding, and construction of a channel and control structure for diversion of a creek around the new reservoir.

Both contracts called for alternate bids on prestressed concrete steel cylinder pipe and lined, coated and wrapped steel pipe. The concrete pipe took the award in both cases, at from 8% to 21.5% below the unit bids for steel pipe.

The contractors furnish all materials. Truck and rail transportation are available. The railroad is two miles from the site.

Numerous abandoned oil, gas and water wells at the site were located and plugged before construction commenced.

Prevailing wage rates include: carpenter $3.40; tractor operator $3.44; crane and power shovel operator $3.72; common laborer $2.275.

Six bids came in on the reservoir and appurtenances, and thirteen on the mains. The bidding included:

Sect. A—Reservoir & Appurtenances

1C	Miller Bros., Inc., Archbold, O	$694,207
2	The Peirce Constr. Co., Toledo, O	740,173
6	Launder & Son, Inc., Toledo, O	1,268,632

Sect. B—Mains

1C	Porter Constr. Co., Hinsdale, Ill	$336,220
2	E. A. Bock Constr. Co., Inc., Ft. Wayne, Ind.	349,569
13	Jechura Bros., Inc., Toledo, O.	480,434

Reservoir

Bids: 3-25-59 Items	Unit	Quantity	Unit Prices 1 C	 2
Reserv embankmet, top elevation 925'				
clear	ac	400	$60.00	$50.00
grub	ac	35	150.00	90.00
earth excavation	cy	340,000	0.305	0.41
Rock excavation	cy	2,600	2.00	3.00
Concrete masonry, cl A	cy	100	90.00	125.00
cl B	cy	15	50.00	100.00
Steel sheet piling	lb	370,000	0.12	0.13
reinf, added or omitted	lb	1,000	0.20	0.14
Gate valves & vaults, 30"	ea	2	8,000	5,000
42"	ea	1	11,500	10,300
Brk msnry, added or omitted	cy	5	40.00	100.00
Air piping, 12" & 18"	ls	job	1,000	600.00
Prestr conc stl cyl pipe,				
36"	lf	1,235	39.25	43.00
54"	lf	195	65.25	63.00
Alt lined, coated & wrapped				
steel pipe, 36"	lf	1,235	50.00	5.00
54"	lf	195	80.00	70.00
Auger borings	lf	2,200	1.00	1.75
Earth fill for embark & blanketing, top elev 925'	cy	670,000	0.305	0.30
Riprap, sel matl, elev 925	cy	60,000	2.75	2.85
Crushed stone fill	cy	200	5.00	4.00
Earth fill, select	cy	100	4.00	4.00
Cement mix, sand	cy	5	50.00	50.00
Roadway	sy	17,110	1.45	1.30
Misc metal work	ls	job	1,000	3,100
Top soil & seed, embankment, top elev 925'	ac	20	485.00	800.00
Lumber in foundation	Mbm	1	500.00	250.00
Sheeting left in place	Mbm	2	300.00	200.00
Engineer's field office	ls	job	2,000	1,500

Completion schedule: 275 cal days
Liquidated damages: Engineering costs only

Mains

Bids: 3-29-59 Items	Unit	Quantity	Unit Prices 1 C	 2
Prestr conc stl cyl pipe,				
30" transmission main	lf	58	$40.00	$23.00
36" transmission main	lf	8,570	23.00	24.00
54" inlet main	lf	1,705	40.00	39.00
Alt lined, ctd & wrapped stl				
pipe, 30" transm main	lf	58	50.00	25.00
36" transm main	lf	8,570	25.00	26.00
54" inlet main	lf	1,705	47.00	41.00
CIP, blowoff discharge, 8"	lf	30	12.00	10.00
riser, 12"	lf	20	15.00	14.00
Cor met culv pipe, 24"	lf	40	8.00	14.00
Conn at exist gate house	ls	job	4,950	2,000
to exist 30" transm main	ls	job	4,300	1,400
54" transm main	ls	job	6,000	7,000
36" outlet main	ls	job	4,000	3,500
Crossing Rte 25	ls	job	30,000	40,000
Gate vlves & vaults, 30"	ea	2	4,200	4,400
Manholes, access, 36"	ea	3	400.00	325.00
54"	ea	1	500.00	375.00
& air relief vlvs, 36"	ea	3	500.00	450.00
54"	ea	1	550.00	450.00
Comb air relief vlv & pitometer manhole, 36"	ea	1	550.00	475.00
Blowoff assemblies	ea	3	500.00	900.00
Excavation, rock	cy	100	5.00	20.00
earth added or omitted	cy	200	2.00	3.00
Concrete masonry, cl A	cy	5	80.00	40.00
cl B	cy	5	60.00	28.00
Stl reinf added or omitted	lb	1,000	0.15	0.14
Brick or conc block masonry, added or omitted	cy	5	120.00	150.00
Asph conc pavement replace	sy	15	10.00	10.00
Conc sidewalk replace	sy	5	6.00	7.00
Bit drwy type pave replace	sy	30	6.00	7.00
Fndn matl, select earth fill	cy	100	2.00	2.00
select cr stone	cy	200	4.00	5.00
Lumber in foundations	Mbm	1	150.00	170.00
Sheeting left in place	Mbm	2	150.00	150.00

Completion schedule: 200 cal days.
Liquidated damages: Engineering costs only

4-D

WROUGHT IRON
IN WATER AND
SEWAGE PLANTS
stymies corrosion

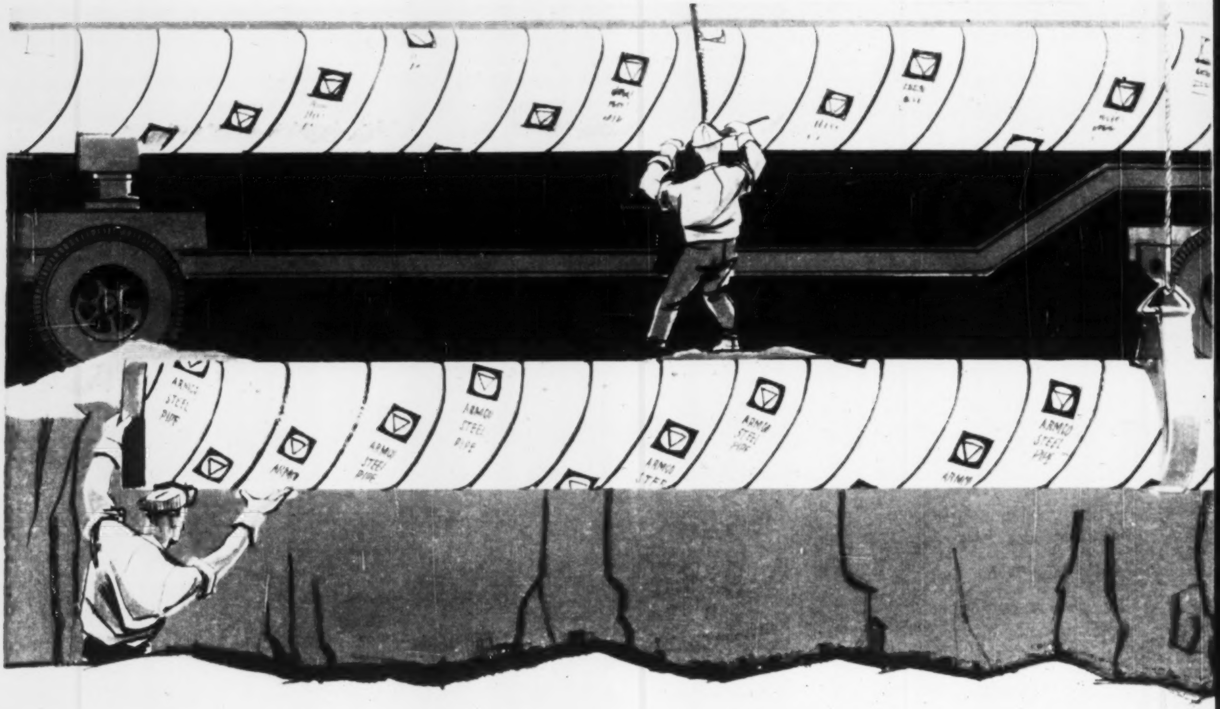
WHERE TO USE IT:

- gas lines
- heat exchanger tubes
- digestor heating coils
- raw sewage lines
- sludge lines
- compressed air lines
- guard railings
- electrical conduit
- chlorine lines
- ammonia lines
- outfall lines
- boiler piping
- weir plates and baffle plates
- smokestacks
- sludge tanks
- manhole ladder steps
- storm sewer buckets
- soil, waste, vent and downspout lines
- hot and cold water piping

Write for technical data on specific applications

BYERS 4-D
WROUGHT IRON
Tubular and Flat Rolled Products
A. M. Byers Co., Pittsburgh 22, Pa.

Armco Steel Water Pipe



AND HERE ARE SOME

You Get 10 Extra Feet Between Joints—Because Armco Welded Steel Pipe is available in 50-foot lengths, it saves the cost of buying and installing more than 26 joints for every mile of water line when compared with ordinary 40-foot lengths. Fewer joints mean faster completion, too.

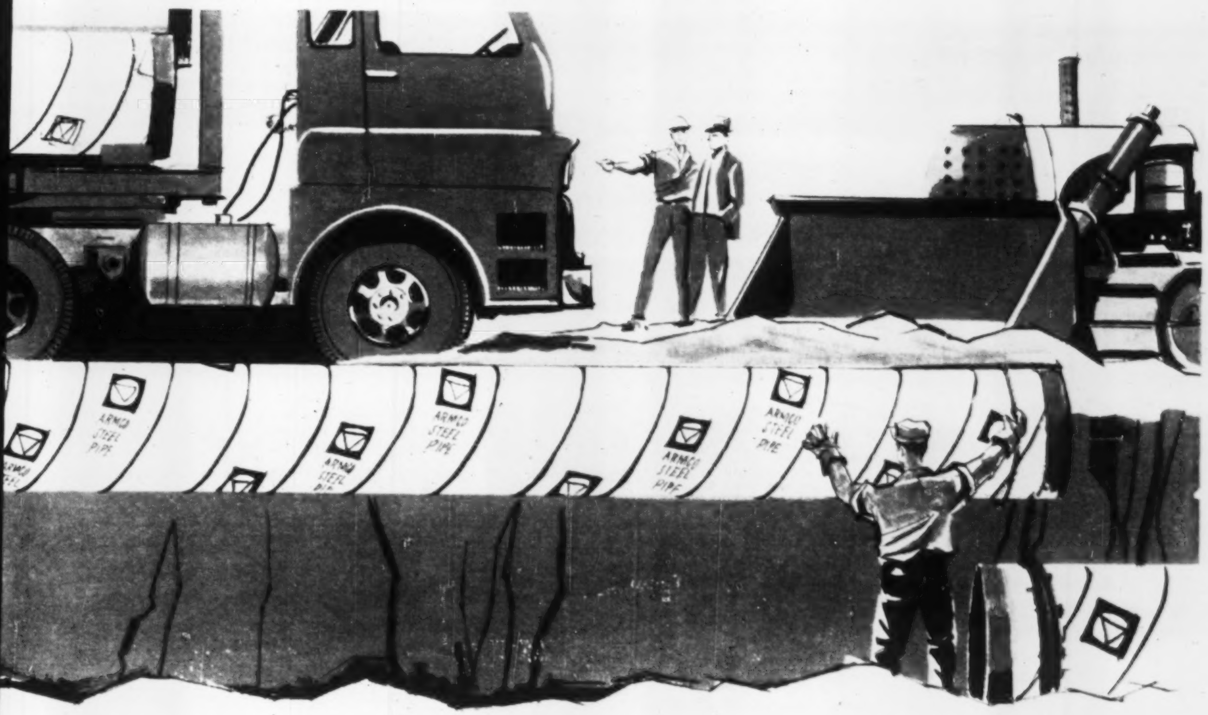
132 Different Diameter-Wall Thickness Combinations—This wide range of sizes makes it easy to meet your specific needs. Diameters range from 6" to 36", with wall thicknesses from .141" to .500". With this wide selection, you don't pay for more metal than you need. Dollar savings result.

Standard and Special Fittings, Too—The Armco Fitting Shop will fabricate the standard and special fittings you need. Many times fittings can be delivered already attached to straight runs of pipe.

Meets Specifications—In service, Armco Pipe is your assurance of high strength, durability, and high flow capacity. Coal tar enamel linings are to AWWA Standard C-203. Pipe meets C-201 and 202.

Unmatched Source of Authoritative Information—Job records, case histories, test data, design information—all are available through your Armco Sales Engineer at your request. Get the complete facts on Armco Welded Steel Water Pipe now. Use this handy coupon. Armco Drainage & Metal Products, Inc., 7249 Curtis Street, Middletown, Ohio.

IS A LOT BETTER



REASONS WHY

New steels are born at Armco

ARMCO DRAINAGE & METAL PRODUCTS, INC.
7249 Curtis Street, Middletown, Ohio

Please have an Armco Sales Engineer call for an appointment to give me full facts on Armco Welded Steel Water Pipe.

NAME ______ TITLE ______

ORGANIZATION ______

STREET ______

CITY ______ ZONE ______ STATE ______

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready mixed Concrete, Asphalt: Last, June 4; Next, July 9.
- Iron and Steel Products, pipe: Last, June 11; Next, July 16.
- Wood Products, Glass, Explosives, Chemicals: Last, June 18; Next, July 23.
- Wage Rates, Building Board, Lath, Insulation: Last, May 28; Next, July 2.

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION SCORED Per M. lots of 2,000 pieces or over,			STRUCTURAL CLAY TILE LOAD BEARING SCORED Per M. lots of 2,000 pieces or over,			BRICK Per M. In quantity		LIME Per ton, In paper, Carload lot.		
	3x12x12 In.	4x12x12 In.	8x12x12 In.	8x12x12 In.	10x12x12 In.	12x12x12 In.	Common backing	Straight hard	Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$170.10pe	$153.25pkke	$306.55pe	$344.85pe			$31.50p	$33.75p	$36.50hh	$28.50hh	$28.50hh
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.60	23.20	
Birmingham	135.00pss	152.00pss		303.00p	376.00p	465.00p	27.00ff	38.00jj	35.02mm	22.30mm	26.33jmm
Boston	232.00†mm	248.00†mm	463.25†mm	556.00†mm			41.50p	56.50p	40.20§	32.20§	......
Chicago	137.00ll	149.00ll	280.00ll			......	30.00	32.00	38.00ll	35.20oll	......
Cincinnati	160.00mmjttR	172.00jmmttR	327.00jddmmR	390.00jmmttR	425.00jmmttR	500.00jmmttR	48.75jk	47.00jk	29.10jmm	25.10jmm	29.10jmm
Cleveland	200.00tt	213.00tt		453.00tt			40.00tt	43.00ggtt	32.75ptt	28.00ptt	.....
Dallas	152.00	152.00	300.00	364.50	446.25	552.50	27.50	49.00	41.80	24.58	28.50
Denver				310.00	390.00	442.00	30.00mm	49.50mm	48.00pmm	42.00pmm	46.00pmm
Detroit	242.00mm	258.00mm	483.00mm	548.00mm	723.00mm	827.00mm	51.50pmm	48.00pmm	38.00mm	30.00mm	40.00mm
Kansas City	158.00mm	158.00mm	312.00mm	312.00mm	400.00mm	500.00mm	34.00mm	34.00mm	36.26	34.26	29.76
Los Angeles	r	r	r	r	r	r	38.00uu		38.00nnll	38.00nnll	39.00nnll
Minneapolis	192.00pe	215.00pe	437.00pe	215.00pwe	......	......	45.60vpe	54.00ype	49.00bbe	38.00bbe	52.00bbde
Montreal	168.78auqoo	180.93auqoo	325.00auxqoo	270.00qoo	400.00qoo	......	48.25bll	56.30bll	39.00	22.00	13.25
New Orleans	186.00	186.00	380.00	380.00	......	......	42.00	55.00	44.00	32.00	32.00
New York	177.00h	189.00h	283.00ch	285.00hn	......	......	44.00p		50.00pR	40.00pR	
Philadelphia	169.00mm	180.20mm	337.90mm	405.00mm	......	......	30/34mm	38/42mm	27.60mm	25.60mm	3.17mmm
Pittsburgh	200.00t	213.00t	400.00t	453.00t	607.00t	693.00t	39.00t	46.00t	38.00t	33.00t	34.00t
St. Louis	172.00mmpp	180.00pp	375.00pp	401.00ppp	459.00pp	621.50pp	44.00mmpp	45.50pp	1.00aapp	.80aapp	1.35aapp
San Francisco	156.85*mm	177.10*mm	235.30dd*mm	159.40qqmm	......	......	43.00*mm	43.00*mm	29.24mm	29.24mm	31.71mm
Seattle	235.00pt	270.00pt	490.00pt	265.00pwt	......	......	48.00t	62.00t	52.00bbt	38.00bbt	4.50mbbt
Toronto	158.00rr	173.00rr	336.00rr	263.00frr	378.00rr	......	35.00rr	63.00rr	37.00mm	34.50mm	32.50mm

•§ F.o.b. yard. •* F.o.b. plant Stockton. •† F.o.b. yard Roxbury. •a Smooth. •b $4.50 del. •c 8 x 12 x 12 In.-6 cell. •d Pulverized hot. •e less 5% disc., 10th., •f 8 x 8 x 12. •g Lumps, $26.72. •h F.o.b. trucks, job site N.Y.C. •i 60 lb sacks. •j Truck load or over. •k $1.00 discount per M, 10 days. •l Red face. •m Per bbl. 180 lb. processed. •n 7¾ x 7¾ x 12. •o Mason's double hydrated pressure. •p Truck lots. •q Provincial and Municipal tax extra (6%). •r Not used: earthquake danger. •s 8 x 16 x 12. •t less 2% disc., cash. •u Incl. Federal tax. •v Sand lime. •w 5 x 8 x 12. •y Chi common. •z Pebble; 80 lb sack. •aa 50 lb sack. •bb LCL. •dd 6 x 12 x 12. •ff 80% common. •gg Smooth. •hh less 25¢ disc., cash. •ii F.o.b. plant. •jj rough; smooth; $40. •kk 3½ x 11½ x 11½. •ll less 2% disc. 10th. •mm less 2%, 10 days. •nn F.o.b., L. A. •oo less 2%, 30 days. •pp add 2% sales tax. •qq 8 x 5½ x 11½. •rr 2½% disc., 10 days. •ss 5% disc., 10 days. •tt less 2% disc., 15th. •uu less 50¢ M, 10 days. •vv 4000 pcs. and over •R revised. ♯ eff. 3/1/59.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. In 600 lb. (Approx.) bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. In 100 lb. cases in oil	READY-MIXED PAINT Per gal., drums			ROOFING SUPPLIES; Carload lots f.o.b. factory				
			Graphite b	Aluminum c	Ferric Oxide d	Rolls, slate surfaced, 85–90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$13.75ggJO	$24.00ggJ	$3.59	$3.86	$3.31	$2.35kk	$2.15kk	$2.62kk	$0.67kk	$57.75kk
Baltimore	17.50lpp	24.00	3.00	4.40	3.50	2.78	4.25	4.25	.48	54.75R
Birmingham	26.00†JR	29.00†J	3.90J	3.40J	....	3.30†mm	2.45ii†mm	2.45ii†mm	.82ffmm	45.00eemm
Boston	24.95†oomm	26.90†mmm	....	....	....	3.91q	2.64g	2.83g	.50g	58.00g
Chicago	15.25rJqqpp	24.00†J	....	....	....	4.10ukk	3.30okk	3.32okk	48.00bbskk	57.70†kk
Cincinnati	15.25†JO	24.00†J	....	....	....	3.14mm	2.30omm	2.42omm	.428ymm	55.96Hmm
Cleveland	25.65†	26.90†	2.46gg	2.72gg	3.06gg	2.93q	2.05o	2.42o	.434y	49.00gg
Dallas	22.50	23.50M		3.25B		3.00u	3.00o	3.00o	.470	66.00hh
Denver	23.00n	24.00	3.98	5.20	3.70	3.19	2.34o	2.80o	.50ff	50.00
Detroit	14.75r	24.00rr	2.70mm	3.95mm	2.70mm	2.82mm	2.05ommll	2.42ommll	.56ffmm	49.00mm
Kansas City	25.65lggoo	26.90	3.99	3.43	3.01	4.01mm	2.72omm	2.72omm	.80y	...
Los Angeles	12.00O	24.00	3.30n	4.50n	4.20n	3.40nkk	2.40nukk	l	.75nykk	l
Minneapolis	16.33N	26.50kk				2.87kk	2.12hikk	2.42hikk	.438ikk	50.00vkk
Montreal	19.45O	26.00wtt	5.52Dfft	6.55xfft	5.10kfft	5.40	4.65f	4.65f	1.60	4.40uu
New Orleans	23.00Jpp	24.00J				2.78	1.98	2.85	.680	
New York	25.65oo	26.90	....	....	....	3.29	2.16o	2.45o	.438s	49.00*
Philadelphia	28.26ggmm	25.90mm	3.60mm	3.40 3.65mm	3.50 4.00mm	3.00 3.30	2.50mm	2.50mm	.37/.45mm	48.54mm
Pittsburgh	21.00mggJ	24.00J	2.20*EJ	2.25*FJ	2.25*GJ	3.57*H	2.75*H	2.95H	.48H	55.00H
St. Louis	25.65†m	26.90				3.57iimm	2.63hhK	2.85hhK	.428yK	62.00K
San Francisco	26.70mm	26.90mm	3.20mm	4.30mm	3.50mm	2.95mm	1.97aaiimm	3.10mm	.46jj	54.00
Seattle	13.75HO	24.50H		4.19ccffJ		4.05qccJ	3.52hccJ		.55cc	
Toronto	14.45	19.55	5.15J	6.18J	5.95J	3.51	2.91aae	2.90o	1.01j	55.10A

•† Delivered. • Note: Red lead in oil 50% higher than white lead in oil. •* Aver. wt. approx. 425 to 550 lb drums. •a Red lead prices change frequently due to pig lead price changes. •b U.S. War Dept. Spec. 3 49A. •c ASTM Spec. D266 31. •d 80% minimum ferric oxide. •e Per 108 sf roll. •f Per 432 sq ft. •g F.o.b. yard Roxbury. •h Per roll, 65 lb. •i Net carload prices, Minneapolis and vicinity. •j 45 gal containers. •k Over 80% ferric oxide. •l Not used. •m 100 lb. keg. •n F.o.b. city. •o Per 60 lb roll. •p 6-drum, 50 gal each. •q Per 90-lb roll. •r F.o.b. factory, Chicago. •s Truckload. •t Incl. Federal tax. •u Per 90-lb square. •v Per ton. •x Ready-mixed. •y 55-gal container. •z Drums. •aa 15 lb. •bb Roofers coating and cement. •cc LCL, truck delivery. •ee Asphalt pitch in 100 lb package. •ff 5-gal drums. •gg F.o.b. factory. •hh Incl. freight. •ii Per 324 sf roll. •jj Asbestos roof coating. •kk less 2% disc., 10th. •mm less 2% disc., 10 days. •oo 100 lb bbls. •pp 50 or 100 lb bags. •qq 500 lbs or more •rr F.o.b. plant, Detroit. •ss 50 lb bbls. •tt 25 lb kegs. •uu 250 lb bbls. •A 400 lb barrels. •B ASTM Spec. D962 49. •C 95%. •D Std. black. •• Milt. spec.: E TTP27; F TTY81; G TTP31. •H less 2% disc., cash. •I Per 100 lb. •J less 1% disc., 10 days. •K add 2% sales tax. •L CL. •M 1 ton or more. •N under 500 lbs, add $1 •O 50 lb. bag. •R revised

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡		VERMICULITE‡			PERLITE‡		ALUMINUM SHEETC†		STAINLESS STEEL† SHEET-TYPE 302g		COPPER WATER* TUBING-TYPE L 2000 ft lots per ft	
	Neat per ton	Gauging per ton	Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	Plaster Aggregate	Concrete Aggregate Untreated	Flat .102" th 36"x108" & 48"x144" per lbjt	Corr roof .032" th 35"x12' per shu	20 ga 48"x96" 120" per cwthh	28 ga 36"x120" per cwtmm	⅜"b	½"c
			per bag of 4 cu ft										
Atlanta	$31.50ss	$37.50ss	$1.55sss	$1.65sss	$1.80sls	$1.65ss	$1.65ss	$0.440noo	$8.83n	$65.68nxx	$74.43nxx	$0.1762ss	$0.2464ss
Baltimore	23.80	34.60	0.95	1.15	1.15	1.15	1.55	0.462	0.451r	63.00	71.25	0.1674	0.2371
Birmingham	37.00ss	43.00ss	1.55ss	1.55ss	1.60lss	1.27ss	1.27lss	0.458dM	9.62K	67.34K	76.09K	0.1800ss	0.25ss
Boston	22.00	30.00	1.40	1.40	1.40	1.45ss	1.50ss	0.462	29.35p	65.42dd*xx	71.92dd	0.1762ss	0.2464ss
Chicago	26.80tt	26.80tt	1.55	1.60	1.60l	1.60	1.60	0.506x	10.294a	64.15ee	72.40ee	0.1762	0.2464
Cincinnati	23.85*ss	23.85*	1.75*ss	1.75*ss	1.75*ss	1.85ssR	1.90ssR	0.434	9.59	65.30xx	74.05xx	0.1726ss	0.2413ss
Cleveland	28.00N	45.00N	1.13ss	1.16ss	1.24lss	1.45ss	1.45ss	0.458aa	8.48	64.33ooxx	72.58ooxx	0.1762tt	0.2464tt
Dallas	30.65	32.65	1.07	1.23	1.32	1.21	1.32	0.484	0.517r	65.00	78.00	0.1762	0.2094
Denver	27.00	27.00	1.50	1.40	1.50	1.40ss	1.55ss	0.452	10.89	69.07gg	76.09gg	0.1702	0.2380
Detroit	28.00ss	28.00ss	1.27ss	1.31ss	1.40ss	1.43ktt	1.50ktt	0.452a	10.19a	65.15axx*	82.57axx*	0.1999	0.2795
Kansas City	30.00	35.00	1.14E	1.18E	1.26lE	1.18		0.444	23.20ggyy	67.50E	76.25E	0.1762	0.2464
Los Angeles	27.00tt	28.00tt	1.25ktt	1.20ktt	1.25tt	1.06	1.10	0.486	10.543	66.02	74.27	0.1762	0.2464
Minneapolis	35.00F	35.00F	1.85tt	1.70F	1.80F	1.40S	1.40S	0.468	16.23	61.61GR	69.61GG	0.1762	0.2464
Montreal	27.60h	35.60h	1.25h	1.40h	1.50h	1.15v	1.15v	43.95AH	12.10H	64.75H		0.1840	0.2187
New Orleans	34.00	48.00	1.25P	1.25P	1.25P	1.25P	1.25P	0.44	24.90R	71.50	72.45	0.1762	0.2464
New York	26.00	35.00	1.35	1.30	1.50	1.40	1.40	0.462ad	9.29aR	64.08aR	72.33aR	17.26f	24.13f
Philadelphia	23.25ss	32.00ss	1.35ss	1.35ss	1.40lss	1.05ss	1.05qqss	0.44ass	9.46ass	66.68ass	75.77ass	16.18	22.24
Pittsburgh	30.00nn	33.00nn	1.50nn	1.50nn	1.50mm	1.50nn	1.50nn	0.452	9.46	64.00	76.25pp	0.1555	0.1848
St. Louis	30.00uu	41.00uu	1.50uu	1.60uu	1.55uu	1.60uu	1.60uu	0.452	10.28	65.39Kmm	71.89yuu	17.02fmss	21.42fmss
San Francisco	29.50ss	30.50ss	1.38ss	1.38ss	1.50ss	1.38oss	1.58oss	0.502	9.76	66.50K	74.25K	0.1762	0.2464
Seattle	42.40nn	45.60nn	1.55nn	1.25knn	1.85lnn	1.50k		0.513D	9.90D	67.02D	75.77D	0.1762	0.1848
Toronto	29.00	48.50	1.45	1.45	1.60	45.00Q		0.3995	24.75ap	73.74	86.52	0.2917	0.3265

‡trucklots, delivered †fob warehouse *fob city •a delivered •b ½" O.D. •c ⅝" O.D. •d 0.100"th •e 34" x 60" sheet •f per 100 ft •g 5 tons & up: cold roll, anneal & pickled 2B finish •h incl. Federal tax •i add 25¢ for pint of additive •j 1100 & 3003 alloy, mill finish •k bag of 3 cu ft •l treated with air entraining agent •m 2-10M ft •n fob mill fr equalized with nearest stocking competitor •o 250 sacks or more •p 100 sq ft •r per lb •s 30 lb bag •t 36" x 108": 10.81 lb sh; 48" x 144": 21.7 lb sh •u 19.31 lb sh •v fob plant •w 48" x 144" •x 0.11"th •y 27 gauge •aa 16M lb & up •dd add $1.00 cwt boxing •ee 4 tons & up •gg add $2 cwt boxing; $0.75 cwt on skids •hh Theoretical wt for 48" x 96": 60.4-lb. per sh •ii 300-bag lots •jj 100-lb bag •mm Theoretical wt; 19.7-lb per sh •nn 2% cash •oo skid packed. •pp type 304. •qq Philadelphia and suburbs. •rr less 2% disc. 15 days. •ss less 2% disc. 10 days. •tt less 2% disc. 10th. •uu add 2% sales tax. •vv Type N. •ww Per 100 sf. •xx less ½% disc. 10 days. •yy .021 ga. •zz .061" th. •A Per 100 lb. •B crated. •C 15M lb. •D less ½% for cash. •E Quantity differential. •F less 5% disc. 10th. •G less ½% disc. 10th. •H Fed. tax exempt. •K less ½%, 10 days. •L 5% disc. 30 days. •M 3003; .452 for 1100. •N less 2%, 15th mo. •O less $2 cash & carry. •P less 2%, 15 days. •Q per ton. •S add .10 bag under 200 bags. •T

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲ **Mass., Boston**—OFF-STREET PARKING GARAGE—BA 7/7—Real Estate Property Bd., City Hall Annex, erecting off-street parking garage, Central and Kilby Sts. $1,500,000. Plans deposit $100. M. A. Dyer Co., 24 School St., Boston, Mass., archt. CD 6/9, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford. Bids opened 6/15.

Angelo Tomasso, Inc., Warren St., New Britain, Conn., LB **$3,641,157** (13 bidders), hot bit. conc. 20,301 lin. ft. on relocation Rte. 2, incl. truck climbing lanes, ramps and side roads and 5 composite rolled beam bridges and rein. con. box culverts, Proj. 70-66, Bozrah, Lebanon and Norwich. CD 6/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., Chili—BA 7/1—Town, Town Hall, 3234 Chili Ave., Rochester, WW. sys. for Chili Water Dist., Sect. A, 50,500 ft. 6- to 12-in. water mains; Sect. B, 60,000 ft. 6- to 12-in. water mains; Sect. C, 77,000 ft. 6- to 12-in. water mains; Sect. D, 81,000 ft. 6- to 12-in. water mains; Sect. E, two water storage standpipes, pumping station. Plans deposit $25. The Lozier Co., 10 Gibbs St., Rochester, engr. CD 4/15/57.

BUILDINGS—BA

Md., Towson—SCHOOL—BA 6/30—Baltimore Co. Bd. Educ., Aigburth Rd., Zone 4, 1 story, brick, concrete elementary school, Hebbville. $700,000-$900,000. Plans deposit $70. Border & Donaldson, 2517 St. Paul St., Baltimore, Zone 18, archts.

† **N. Y., Brookhaven**—COSMOTRON EXPERIMENTAL AREA—BA 7/7—U. S. Atomic Energy Comn., Brookhaven National Laboratory, Bldg. 464, 53 Bell Ave., Upton, cosmotron experimental area, Brookhaven National Laboratory, Upton, Inv. No. NY 49-59. Plans deposit $15. Burns & Roe, Inc., 150 West Broadway, New York 13, N. Y., archt.-engr. CD 6/11.

▲ **N. J., Woodbury**—SCHOOL—BA 7/7—West Deptford Twp. Bd. Educ., high school, $2,[illegible]50,000. Micklewright & Mountford, 90 E. Stuyvesant St., Trenton, engr.-archts. CD 2/2.

▲ **N. J., Paramus**—SCHOOL—BA 7/9—Bd. Educ., high school, $2,060,000. Arthur Rigolo, Rte. 46, Clifton, archt. CD 10/10.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton.

F. A. Canuso & Sons, 173 W. Roosevelt Blvd., Phila., Pa., CA **$2,416,892**, paving, grading 3.157 mi. Rte. 80S, Sect. 1, from Rte. 130 to Browning Rd., and Rte. 295, Sect. 2G, from Rte. 80S to Coplay Rd., Camden Co. Bids May 20, awarded June 10. CD 5/22, under LB.

BUILDINGS—LB & CA

▲ **General Builders Constr. Corp.**, Cedar Lane, Howard Beach, N. Y., Owner Builds, **$25,000,000**, twenty-five 6 story APARTMENTS, 400 one-family semi-detached units, school, shopping center and recreation facilities, Shore Parkway and Cross Bay Blvd., OZONE PARK, N. Y. Benjamin Braunstein, 163-18 Jamaica Ave., Jamaica, N. Y., archt.

SOUTH

BUILDINGS—BA

▲ **Ga., Atlanta**—NURSING HOME—BA 7/1—Fulton County Highview Nursing Home and nurses quarters. $1,500,000. Plans deposit $100. McDonald & Co., 41 Exchange Place S.E., archts. CD 6/12.

▲ **Miss., Jackson**—MOTEL, etc.—BA 6/30—M. A. Lewis, c/o R. W. Naef & Assoc., archt., 844 N. State St., Jackson, Miss., brick and concrete motel, swimming pool, parking, Hamilton and Lamar Sts. $1,000,000. Hamilton, Shultz & Luke, 413 S. State St., Jackson, Miss., consult. engrs. CD 3/24.

BUILDINGS—LB & CA

▲† **Wise Constr. Co.**, 8th and Grace Sts., Richmond, Va., CA **$5,107,900**, FEDERAL OFFICE Va. Proj. 44901, RICHMOND, VA. General Services Admin., Regional Office Bldg., 7th and D Sts., S. W., Wash., D. C. Bids May 15. CD 5/20 under LB.

▲† **Florida Builders, Inc.**, 700 43 St. South, St. Petersburg, Fla., CA **$1,155,000**, 73 units Capehart HOUSING, FORT STEWART, GA. U. S. Eng., P.O. Box 889, Savannah, Ga. Bids March 31. CD 4/6, under LB.

▲ **Peyton Higginson Co.**, 59½ St. Francis, Mobile, Ala., CA **$1,000,000**, MOTOR HOTEL, MOBILE, ALA. Pick Hotel Corp., c/o contractor.

▲ **Residential Developers, Inc.**, 7111 Florida Blvd., Baton Rouge, La., LB **$1,015,170**, low-rent HOUSING, Proj. 55-1, OPELOUSAS, LA. City Housing Auth., Opelousas, La. Bids June 10. CD 5/5.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

O., Cleveland—BA 7/2—Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Zone 13, paving and imprv. Independence Rd. from 700 ft. south of Clark to May Ave. $174,500. Plans deposit $10. Albert S. Porter, c/o owner, co. engr. CD 11/11/58.

▲ **Ill., Chicago**—MAINTENANCE FACILITIES—BA 7/15—Dpt. Purchase, City Hall, Zone 2, American Airlines maintenance facilities, Chicago-O'Hare International Airport, specs. 80-85-59-27. Extended date. Naess & Murphy, 80 E. Jackson Blvd., Chicago, Zone 4, archt.-engr. CD 5/28.

† **Illinois**—BA About 7/22—U. S. Eng., 420 Locust St., St. Louis 2, Mo., imprvs. to levees, East St. Louis and vicinity, (East Side Levee and Sanitary Dist.), Proj. Item II-R, St. Clair Co., and Proj. Item IV-R, Madison Co. CD 11/10.

BUILDINGS—BA

Ind., Plymouth—PRINTING PLANT—BA 7/2—Samuel Bass, Plymouth, 1 story, bsmnt., printing plant. $150,000. Maurer & Maurer, 312 Lafayette Bldg., South Bend, archts.

O., Bexley—SCHOOL—BA 7/9—Bd. Educ., 326 S. Cassingham Rd., high school alterations. Plans deposit $25. Dan A. Carmichael, 5 E. Long St., Columbus 15, O., archt. CD 11/12/58.

O., Youngstown—SCHOOL—BA 7/9—Bd. Educ., Austintown School Dist., 5800 Mahoning Ave., junior high school, Kirk grade school addn. Plans deposit $25. Kling & Frost, 661 Wick Ave., Youngstown, O., archts. CD 11/10/58.

Ind., Zionsville—HOME FOR AGED—BA 7/10—Indiana Baptist Home, 1 story, bsmnt., 35,000 sq. ft. Home for Aged. $600,000. Plans deposit $40. Henry Wolf, 613 W. Market St., Logansport, archt. CD 6/3.

▲† **Mich., Marquette**—BASE HOSPITAL, etc.—BA 7/10—U. S. Eng., 1101 Washington Blvd., Detroit, Zone 31, Mich., hospital, K. I. Sawyer Air Force Base, ENG-20-064-59-83. $1,910,000. CD 6/8.

▲ **Wis., King**—INFIRMARY—BA 7/22—State Dpt. Veterans Affairs, State Capitol, Madison, 3 story, bsmnt. infirmary, $2,000,000. Plans deposit $50. R. D. Culbertson, state engr., R. Kirckhoff, state archt. CD 3/15/57.

▲† **Wis., Kansasville**—HOSPITAL—BA About 7/27—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., 1 story, approx. 51,000 sq. ft., poured concrete, steel frame with metal roof decking, hospital; utilities and site imprvs., Richard I. Bong Air Force Base, ENG-11-032-59-101. CD 5/13.

Ill., Franklin Park—WAREHOUSE—Bids Asked—N. & D. Realty Co., 4051 W. 51 St., Chicago, 24,186 sq. ft. steel frame conc. warehouse addn., Mannheim Rd. $228,000. A. Epstein & Sons, 2011 W. Pershing Rd., Chicago, archt.

▲ **Ind., Chesterton**—STEEL MILL—Bids Asked—Midwest Steel Corp., Div. of National Steel Corp., Grant Bldg., Pittsburgh, Pa., steel finishing and strip mill, galvanizing, plating plant and strip mill, blast furnace, Ogden Dunes. $100,000,000. CD 3/12, under Gary, Ind.

HEAVY CONSTRUCTION—LB & CA

▲ **Sterling Drugs, Inc.**, 1450 Broadway, New York, N. Y., CA **$11,870,000**, 200 ton per day wet air oxidation process at West-Southwest Sewage Treatment Plant, CHICAGO, ILL. Sanitary Dist. of Greater Chicago, 100 E. Erie St., Chicago, Ill. Bids June 4. CD 6/8, under LB.

BUILDINGS—LB & CA

▲ **Carlton House, Inc.**, 260 S. Forge St., Akron, O., Owner Builds, **$2,000,000**, 59-unit APARTMENT, Portage Path, AKRON, O. Matthew J. Rosenstock & Assoc., 834 E. Exchange, Akron, O., engrs.

▲ **Akron Home Development Co.**, c/o Wm. Selzer, 992 Andrew, Akron, O., Owner—Builds, **$4,000,000**, 240 HOMES, along Cuyahoga River south of N. River Rd. between Munroe Falls boundary line and Marsh Rd., STOW, O.

▲ **Gillmore-Olson Co.**, 1874 E. 55th St., Cleveland 1, O., CA est. **$2,000,000**, NURSING HOME, CLEVELAND HEIGHTS, O. Benjamin Rose Institute, Rose Bldg., Cleveland 15, O. Bids May 28. CD 5/15.

▲ **Theodore Boquer Co.**, Wooster, O., CA **$776,970** est. $1,400,000 (8 bidders), general contract, HIGH SCHOOL, LODI, O. Cloverleaf Bd. Educ., Lodi, O. Bids June 6. CD 5/21.

▲ **Thunderbird Homes, Inc.**, 830 E. 19th St., N.E., Cleveland, O., Owner Builds, **$1,500,000**, 111 HOMES, 59-acre site, Lake Erie, Rte. 306 (Reynolds Rd.), MENTOR-ON-THE-LAKE (near Mentor), O.

▲ **Flair Builders**, 6637 Fitch Rd., Olmsted Falls, O., Owner Builds, **$3,250,000**, 185 HOMES, Eastwood, Westwood, Adelle Lanes and Crestwood Dr., OLMSTED FALLS, O. Marvin Braun, 1311 Commonwealth Ave., Cleveland, O., archt.

Butler Mfg. Co., 7400 E. 13 St., Kansas City, Mo., CA est. **$180,000**, 18,000 sq. ft., brick and steel FACTORY addn., AUBURN, IND. Dana Corp., Auburn Div., Auburn, Ind.

▲ **Geo. D. Hardin**, Cemetery Rd., Plainfield, Ind., Owner Builds, **$2,000,000**, 120 HOMES in Rolling Meadows subdivision, southeast of here on 40-acre site, PLAINFIELD, IND.

▲ **Jos. J. Duffy Co.**, 4994 N. Elston Ave., Chicago, Ill., CA **$2,938,597**, 200,000 sq. ft. HIGH SCHOOL, gym, swimming pool, Bannockburn, HIGHLAND PARK, ILL. Highland Park School Dist., 111 Vince Ave., Highland Park, Ill. Bids May 21. CD 5/27, under LB.

Haglund & Ames, 123 Greenwood Ave., Waukegan, Ill., CA **$319,000**, 2 story, 20,000 sq. ft. FACTORY mfg. electronic parts, NORTH CHICAGO, ILL. Fansteel Metallurgical Corp., 2200 Sheridan Rd., North Chicago, Ill. Awarded June 9. CD 5/28.

▲ **Federal Projects Corp.**, 1620 W. Thompson St., Phila., Pa., CA Est. **$22,000,000**, superstructure for POST OFFICE (leasing by Post Office Dpt.), DETROIT, MICH. U. S. Post Office Dpt., 12th and Pennsylvania Ave., N.W., Wash., D. C. Bids May 28. CD 6/4, under LB.

▲ **Sumner Sollitt Co.**, 307 N. Michigan Blvd., Chicago 1, Ill., CA **$1,362,540**, 2 story, 210×210 OFFICE, 16 and Rockwell St., CHICAGO, ILL. Joseph T. Ryerson & Son, Inc., [illegible], Chicago, Ill. Skidmore, Owings & Merrill, 30 W. Monroe St., Chicago 3, Ill., archts. Awarded June 12.

Farthing Bros., Streator, Ill., LB **$677,383**, county HOSPITAL addn., remodeling, PRINCETON, ILL. Bureau County Bldg. Superv., Court House, Princeton, Ill. Bids May 21.

▲ **S. Patti Constr. Co.**, 340 Admiral St., Kansas City, Mo., CA $1,215,000, POWER PLANT addn., SPRINGFIELD, ILL. City, City Hall, Springfield, Ill. Bids April 21, awarded May 12. CD 4/24, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

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Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

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- **Low Installation Cost**
- **Low Operating Cost**
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The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.

INSTALLATION DATA:

PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)

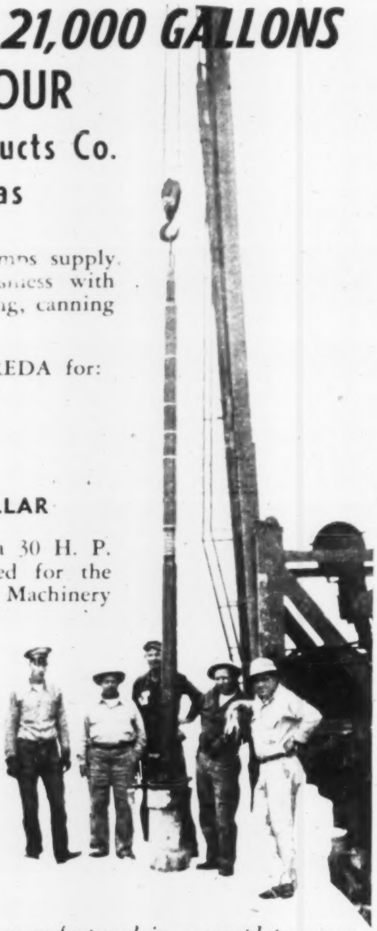
CASING: 10-inch steel casing

POWER REQUIRED: 440 volts a. c., 3 phase, 60 cycle

MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day

WATER SUPPLIED BY REDA: 21,000 gallons per hour

PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.



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HEAVY CONSTRUCTION—BA

† **Mo., Grandview**—SHELTERS, etc.—BA On Or About 7/16—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., shelters, ready fighter A/C, Richards-Gebaur Air Force Base. ENG-23-028-59-79. CD 9/9/58.

▲† **Mont., Glasgow**—HOSPITAL—BA 7/22—U. S. Eng., City-County Airport, Walla Walla, Wash., 1 story, 43,000 sq. ft. rein.-con., steel frame, hospital, Glasgow Air Force Base. ENG-45-164-59-51. $1,930,000. Plans deposit $200. CD 5/13.

† **Ark., Blytheville**—PARKING—BA About 7/15—U. S. Eng., P.O. Box 867, Little Rock, commissary parking area, Item No-016 (Utilities) Blytheville Air Force Base, ENG-03-050-59-58. CD 9/10.

BUILDINGS—BA

▲ **Okla., Norman**—EDUCATION CENTER—BA 6/30—Bd. Regents, State Capitol Bldg., Oklahoma City, Center for Continuing Education, 4 bldgs. University of Oklahoma. $2,500,000. Plans deposit $50. Wright & Selby & Reynolds & Morrison, Hightower Bldg., assoc. archts., R. Kuhlman, c/o owner archt., Carnahan & Thompson, Okla. Natural Gas Bldg., Oklahoma City, engr. CD 10/23.

▲ **Minn., Winona**—SCIENCE CENTER—BA 7/1—St. Theresa College, 3 story, Roger Bacon science center. $1,000,000. Ellerbe & Co., 333 Sibley St., St. Paul, Minn., archts. CD 10/30/58.

† **South Dakota**—BA 7/23—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., power structures (intake superstructures), consisting completion rein.-con. power intake control structures located above dam, in reservoir pool at upstream end of seven power tunnels, incl. removal of Dike, B. concrete, C. reinforcing steel, D. Waterstop, E. Misc. metals, F. mechanical sys., G. electrical sys. Oahe Reservoir Proj. near Pierre, ENG-25-066-59-142. CD 6/5.

BUILDINGS—BA

▲ **Tex., Fort Worth**—BANK, etc.—BA 7/10—First 18 story, masonry, bank and office, 500-car parking garage, 6th, 7th and Lamar Sts. $11,000,000. Plans deposit $50. Preston M. Geren, 1607 Fort Worth National Bank, archt., and Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., archts. CD 4/20.

▲ **Colo., Denver**—HOSPITAL—BA 7/16—St. Anthony's Hospital, West 16 and Quitman, 8 story, 50,000 sq. ft. hospital addn., $1,301,830. C. L. Monnott, 303½ Classen Blvd., Oklahoma City, Okla., archt. CD 1/9.

▲ **Colo., Denver**—PLANT—BA About 7/22—Bowman Biscuit Co., 842 Walnut (Selected list of bidders), 3 story, 400,000 sq. ft. plant, warehouse and office, $5,000,000. Rust Engineering, Box 5450, Terminal Annex, engr. CD 1/2/58.

HEAVY CONSTRUCTION—LB & CA

▲ **Torson Constr. Co.**, 1890 Woodswether Rd., Kansas City, Mo., CA **$1,998,887**, est. $2,244,089, gravity fall sanitary sewer mains and laterals, Projects RSS IV thru VIII involving 62 mi. 8- to 21-in. sanitary sewers. RAYTOWN, MO. City, City Hall, Raytown, Mo. Bids May 20. CD 5/27, under LB.

▲† **Whisenant Constr. Co.**, 1611 W. Colorado Ave., Colorado Springs, Colo., LB **$1,163,377**, est. $1,192,590, rehabilitating 500-units Wherry HOUSING, Francis E. Warren Air Force Base, IFB 48-608-59-88B. CHEYENNE, WYO. Base Procurement Office, Bldg. 228, Francis E. Warren Air Force Base, Wyo. Bids June 9. CD 5/27.

▲† **Morrison-Knudsen Co., Johnson, Drake & Piper, Inc., Paul Hardeman, Inc. & Olson Constr. Co.** and **F. E. Young**, 411 West 5 St., Los Angeles, Calif., CA **$26,944,820**, est. $28,526,750, WS-107 A2 technical facilities Complex 2A, 2B, 2C Lowry Air Force Base for Titan Base, ENG-25-066-59-84. DENVER, COLO. U. S. Eng., 1709 Jackson, Omaha, Neb. Bids June 10, awarded June 12. CD 6/12, under LB.

BUILDINGS—LB & CA

▲ **G. F. Cook Constr. Co.**, 2833 Lyndale Ave. South, Minneapolis, Minn., CA total est. **$25,000,000** with equipment, superstructure for Unit No. 4, "Black Dog" STEAM-ELECTRIC PLANT south of Twin Cities on Minnesota River, MINNEAPOLIS, MINN. Northern States Power Co., 15 South Fifth St., Minneapolis, Minn. Bids June 5. CD 6/4.

▲ **H. B. Deal Constr. Co.**, 5517 Manchester Ave., St. Louis 10, Mo., CA **$1,049,352** est. over $500,000, 3 story, bsmnt., 46,000 sq. ft. brick, masonry blocks, steel, conc., etc. OFFICE, 3810 Lindell Blvd., ST. LOUIS, MO. Jack Dubinsky & Sons (Harold W. & Melvin Dubinsky), 701 Chestnut St., St. Louis 1, Mo. International Business Machines Corp., 3590 Lindell Blvd., St. Louis 3, Mo., lessee. Bids Apr. 29. CD 4/15.

▲† **J. W. Bateson**, 10130 Monroe St., Dallas, Tex., LB **$4,483,300** (11 bidders) U. S. COURT HOUSE and FEDERAL OFFICE Bldg., OKLAHOMA CITY, OKLA. General Services Admin., 1114 Commerce St., Dallas, Tex. Dow Gumerson & Benham Engineering Co. and Affiliates, 1029 N. Walker St., Oklahoma City, Okla., archt.-engrs. Bids June 9. CD 5/5.

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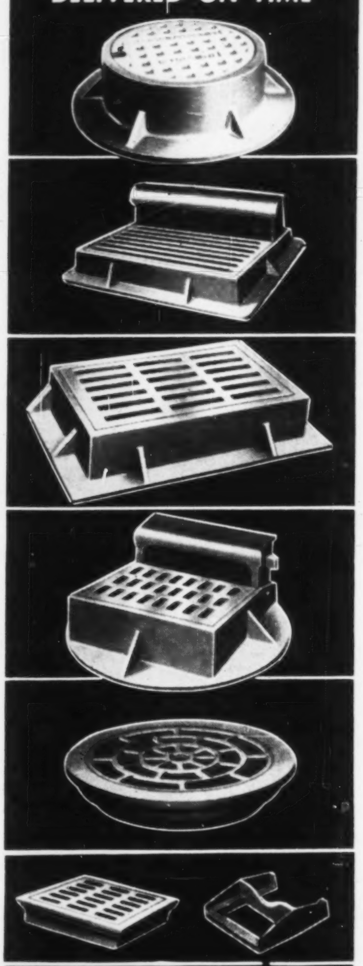

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▲ **Parsons Constr. Co.**, 2512 Deer Park Blvd., Omaha, Neb. LB **$1,778,429**, (10 bidders) NEBRASKA CENTER for Continuing Education, LINCOLN, NEB. University of Nebraska, 12th and R Sts., Lincoln, Neb. Bids June 9. CD 5/22.

Ray Martin Co., 104 S. 38th Ave., Omaha, Neb. LB **$615,839**, (10 bidders) Sched. III, mechanical work for Nebraska Center (Lincoln, Neb.).

▲ **John B. Gutmann Constr. Co.**, 1301 S. Vandeventer Ave., St. Louis 10, Mo., LB **$1,048,158** (10 bidders), 4 story, ground floor, penthouse, 55,000 sq. ft. CHAPEL and SCHOOL BLDG. for Mount Providence Boarding School for Boys, NORMANDY (ST. LOUIS 21 P.O.), MO. Sisters of Divine Providence, 8351 Florissant Rd., Normandy 21, Mo. Bids June 3. CD 5/5.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Ariz., Tucson**—POWER PLANT—BA 7/1—U. S. Engs., 751 S. Figueroa St., Los Angeles, Calif., electric primary power plant and electronic distr. sys., Mount Lemmon Air Force Station. ENG-04-353-59-114. $175,000.

Calif., Los Angeles—BA 7/10—Los Angeles County Flood Control Dist., 2250 Alcazar St., 5944 ft. rein-con. pipe 18 in. to 75 in., Magnolia Ave. and Victory Blvd. drains, Proj. 172, Burbank. $200,000. CD 11/10.

Ore., The Dalles—BA 7/13—City, City Hall, sewage treatment plant. Plans deposit $25. Stevens & Thompson, 2234 SW 5 Ave., Portland, engrs. CD 1/6/58.

Calif., Sacramento—BA 7/15—Sacramento Municipal Utility Dist., 1708 59th St., furnishing, delivering one 9x12 ft., 6 in. fixed wheel gate hoist and erecting one 9 ft. 7 in. x 13 ft. 6 in. bulkhead gate. Inv. 2124. Plans deposit $5. CD 1/8/58.

† **Oregon**—BA 7/9—U. S. Eng., Pittock Block, Portland, Ore., Dolphin reconstr., U. S. Government Moorings at Portland. CIVENG-35-026-59-230.

Ore., Portland—BA 7/10—City, City Hall, Bull Run Dam No. 2 and spillway. Plans deposit $50. Stevens & Thompson, 2234 S.W. 5th Ave., Portland, Ore., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ † **H. George & Sons**, Hutton Bldg., Spokane, Wash., LB **$1,415,169**, est. $1,468,500, (7 bidders), LAUNCH OPERATIONS BLDG. at Fairchild Air Force Base, Inv. 59-82, SPOKANE, WASH., U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids June 11. CD 6/4.

† **S. S. Mullen, Inc.**, P. O. Box 3886, Terminal Annex, Seattle, Wash., LB **$941,246**, est. $1,133,274, spillway excavation, John Day Dam, Klickitat Co., CIVENG-45-164-59-53, OREGON, WASHINGTON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids June 10. CD 5/13.

▲ **Peter Kiewit Sons Co.**, 442 Post St., San Francisco, Calif., LB **$13,552,555** (11 bidders) 350 ft. high Union Valley Dam, El Dorado Co., Upper American River Proj., earthfill structure involving 12,000,000 cu. yds. material, SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 59th and R Sts., Sacramento, Calif. Bids June 16. CD 5/28.

Midstate Constr. Co., 347 Clay St., San Francisco, Calif. CA **$542,000**, 1 story Hall of Flowers, 9th Ave. and Lincoln Way, SAN FRANCISCO, CALIF. City and San Francisco County, City Hall, San Francisco, Calif. Bids May 26. CD 6/3, under LB.

▲ **Vinnell Co. & Ukropina-Polich-Kral Co.**, Box 105, San Gabriel, Calif., CA **$2,387,732**, joint venture Sched. I, 2 mi. 87 in., 84 in. and 75 in. rein-con pipe, Sched. II, 2.3 mi. 72 in. and 66 in. rein-con pipe, Sched. III, 3.7 mi. 60 in. and 48 in. rein-con pipe totaling about 8 mi. sewer and pipeline constr., WALNUT CREEK, CALIF. Central Contra Costa Sanitary Dist., 1250 Springbrook Rd., Walnut Creek, Calif. Bids May 7. CD 5/18, under LB.

BUILDINGS—LB & CA

▲† **D. O. Norton & Sons Contractors**, 2802 No. 16 St., Phoenix, Ariz., LB **$1,256,000**, HOSPITAL, SELLS, ARIZ. Bureau of Indian Affairs, Dpt. Interior, P.O. Box 1777, Albuquerque, N. M.

▲ **Robertson Investment Corp.**, 2137 W. Ball Rd., Anaheim, Calif. CA **$1,061,100**, 81 DWELLINGS, Tract 2893, ANAHEIM, CALIF. C. B. Robertson, 2127 W. Ball Rd., Anaheim, Calif.

▲ **Harvey Nichols Constr. Co.**, 926 E. Slauson Ave., Los Angeles, Calif., LB **$2,914,000** (12 bidders), 1, 2 and 3 story A. W. Clark—JUNIOR HIGH SCHOOL, New York Ave. and Rosemont JUNIOR HIGH SCHOOL, La Crescenta, GLENDALE, CALIF. Glendale Unif. School Dist., 411 E. Wilson Ave., Glendale, Calif. Bids June 11. CD 5/21.

▲† **Griffith Co.**, 1060 S. Broadway, Los Angeles, Calif., LB **$1,252,500**, one 762.5 ft. x 1,012.5 ft. concrete and one 400 x 737.5 ft. portland cement concrete aircraft maintenance apron, aircraft parking aprons, taxiways, apron and taxiway shoulder stab., lighting facilities, etc., 2nd increment, Naval Air Station, Spec. 20961/59 (rev.), LEMOORE, CALIF. Dist. P. Wks. Office, 12th Naval Dist., Room C112, San Bruno, Calif. Bids June 11. CD 5/25.

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BAR BOLSTER SUPPORTS

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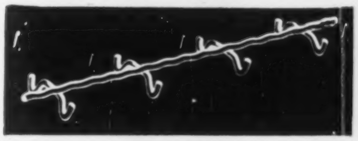

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EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
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Wick Constr. Co., 720 N. 35 St., Seattle 3, Wash., LB **$923,500,** (7 bidders), 7 story, rein.-conc. women's DORMITORY and 3 story food facilities bldg., SEATTLE, WASH., University of Washington, 15 Ave. N.E. and E. 40 St., Seattle 5, Wash. Bids June 9. CD 5/20.

▲ **Anderson Constr. Co.,** 115 S. 9 St., Tacoma, Wash., LB **$1,399,173** (13 bidders) 2 story, 71,400 sq. ft., steel frame and rein.-con. HOSPITAL, SEATTLE, WASH. Northwest Memorial Hospital Assn., 11726 Aurora Ave., Seattle, Wash. Bids June 12. CD 5/15.

▲ **Balfern Corp.,** 7862 S. Western Ave., Los Angeles, Calif., CA **$1,036,500,** 42 DWELLINGS, Canehill Ave., Hungerford St., Balfern Ave., Tr. 24156, BELLFLOWER, CALIF. Canehill Corp., 7862 S. Western Ave., Los Angeles, Calif.

▲ **Bowman Constr. Co.,** 700 S. 6th St., Burbank, Calif., CA **$2,000,000,** 8 story rigid steel frame OFFICE, 1st St., Orange Grove Ave., BURBANK, CALIF. Affiliated Twilighter Hotels, c/o Contractor. Joe S. Jordan, 213 S. 3rd St., Burbank, Calif., archt.

▲ **United Constr. Co., Ltd.,** 645 Ahua St., Honolulu, Hawaii, CA **$1,094,362** (6 bidders), 4 story territorial HEALTH DPT. ISLAND OAHU, HAWAII—Territorial Dpt. Health, Honolulu, Hawaii. Merrill, Simons & Roehrig, Damon Bldg., Honolulu, Hawaii, archts. Hideshi, Iwamoto, Deputy Territorial P. Wks. engr. Awarded June 11.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—LB & CA

▲ Fruin-Colnon International S. A. and LeBoeuf Dougherty Inc., 1706 Olive St., St. Louis, Mo., LB **$2,943,961,** substructure, Balboa CANAL ZONE, Panama Canal Co., Balboa, Canal Zone, Bids June 12. CD 3/16.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ Piggott Constr. Ltd., 502-5th Ave. N., Saskatoon, Sask., CA **$6,983,457,** South Saskatchewan River Dam embankment, Stage 2, involving 18,000,000 cu. yd. excav., 14,000,000 cu. yd. compacted embankment, 5 mi. north of Dunblane, SASKATCHEWAN. Prairie Farm Rehabilitation Admin., Regina, Saskatchewan. Bids May 28. CD 6/4, under LB.

PROPOSED PROJECTS

WATER SUPPLY

▲ Fla., Miami Beach—City, City Hall, 1130 Washington Ave., voted bonds June 2, water supply main at 41 St. Causeway main at Western end of MacArthur Causeway, and several enlargements of present mains. $2,060,000. CD 5/26.

▲ Pa., Erie—City, City Hall, 5 m.g. reservoir, pumping station, water main extensions. $1,135,000. To go ahead 1960.

SEWERS, WASTE DISPOSAL

Ala., Florence—City, City Hall, 1959 sanitary sewer imprvs., incl. lateral lines, $160,000. White & Hallmark, Old City Hall Bldg., consult. engrs. Bids in October.

▲ Calif., Woodland—City, City Hall, voted bonds sanitary sewers $531,000, storm sewers $643,000. CD [illegible]

▲ La., Shreveport—Caddo Parish Sewer Dist. No. 4, (La. 16-P-3052) sewer facilities. $1,173,000. Rassie & Galloway, 3213 Metairie Rd., Metairie, La., consult. engrs.

▲ O., Cleveland—City, City Hall, Zone 14, bond election Nov. 3, sewers. $6,000,000.

▲ Wash., East Wenatchee—East Wenatchee Sewer Dist. 1, sanitary sewerage sys., Proj. No. Wash. 45-P-3068, $1,278,000. Bids in Fall. Gray & Osborne, 228 S. 2 St., Yakima, engrs. CD 5/28.

AIRPORTS

▲ Neb., Omaha—AIRPORT TERMINAL—City, 19th and Farnam Sts., plans by Leo A. Daly, 633 Ins. Bldg., airport terminal. $1,940,000. [illegible]

▲ Wash., Seattle—HANGAR and SHOPS—Northwest Orient Airlines, 1885 University Ave., St. Paul, Minn., hangar and shops expansion, Seattle-Tacoma International Airport. $1,500,000. [illegible] this year.

PUERTO RICO

▲ Puerto Rico, San Juan—OFFICE BLDG.—Esteban Bird, Castle Enterprises, Avenida Ashford 1020, San Juan, plans by Gonzalo Gernos, Calle Bolivia 614, San Juan, 9 story office with 6 story parking garage, Ponce de Leon Ave., parada 17. $4,000,000.

AMERICANS ABROAD

▲ Iraq — UNIVERSITY BLDGS.—Baghdad University, Baghdad, plans by Walter Gropius, 63 Brattle St., Cambridge 3, Mass., U. S. A., Baghdad University Bldgs. $70,000,000

PRESTRESSED CONCRETE REPORT

NASHVILLE BREEKO BLOCK USES LESCHEN

Leschen Strand uniform performance ideal for unique, high-strength "mono-wing" building members

LESCHEN
PRESTRESS STRAND

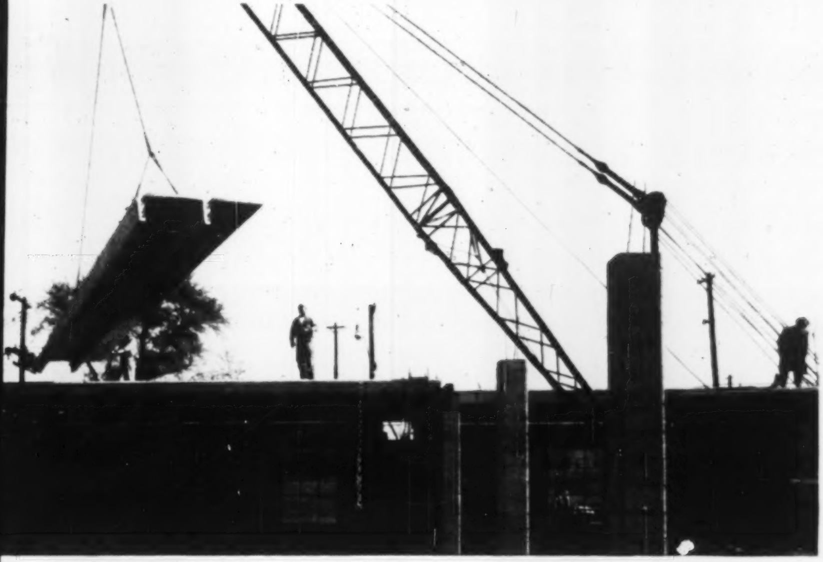
Nashville Breeko Block Company, Nashville, Tennessee, has pioneered and proven the value of prestressed concrete "mono-wing" slabs for floor and roof construction. They now have an annual production capacity in excess of one million square feet of roof and floor slab. From the very beginning of "mono-wing" production, *Leschen Prestressed Strand*, in multiple sizes depending on load, has been specified for these unique, interconnecting units. Also originators of the concrete, multi-element block beam, Nashville Breeko Block fabricates with Leschen Strand in their production of both block and poured concrete beams. Facilities for producing these beams total nearly 500,000 feet annually.

Nashville Breeko Block Company is another of the growing group of successful prestressed concrete fabricators who now rely on Leschen Strand and find genuine benefits in the practical experience offered by Leschen's engineering staff.

Prestressed concrete work throughout the nation has proved the unvarying quality of Leschen Strand . . . foot by foot, always the same matching, mechanical perfection.

If you would like to talk with a Leschen engineer or receive complete specifications and other helpful information, write today to: *Leschen Wire Rope Division, H. K. Porter Company, Inc., 2727 Hamilton Avenue, St. Louis 12, Missouri.*

Mr. Carroll Strohm, Jr., General Manager (left), and Mr. J. L. Markam, Superintendent, pictured at a beam bed. Mr. Strohm reports, "We can depend on Leschen Strand because it's always top quality. And because the mechanical properties never vary from strand to strand, we can fabricate faster at lower cost."



A Nashville Breeko "mono-wing" section swinging into place. This wing section, in standard 5'6" widths, will fit into a rabbeted recess in the preceding slab, forming a strong, bearing, overlapping joint. The speed of this type construction is an important cost-saver.

A finished interior where the "mono-wing" sections have been left exposed. Covered only with acoustical plaster, Nashville Breeko "mono-wings" show no joints. This highly acceptable, finished appearance is one more reason why they have become an important, economical building material.

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PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Neptoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

LS 4008

PUBLIC BUILDINGS

▲ **Ala., Birmingham**—HOSPITAL—Jefferson County, Courthouse; county hospital. $3,000,000-$4,000,000.

▲ **Calif., Carmichael**—SCHOOL—San Juan Union High School Dist., 3738 Walnut Ave.; plans by Cox & Liske, 800 10th St., Sacramento; Mira Loma High School. $2,000,000. Lester O'Meara, 1400 10th St., Sacramento, consult. engr. Bids in 1960. CD 5/31/57.

▲ **Ga., Atlanta**—NURSING HOME—Fulton Co. Commrs. Roads & Revenues, Courthouse; plans by McDonald & Co. Assocs., 31 Exchange Place S.E.; Highview Nursing Home, Springdale Rd. S.W. $1,500,000.

▲ **Ill., Marion**—HOUSING—Williamson County Housing Auth., Court House; 84 unit housing, northeast of city, and other [illegible] units south. County [illegible]. $1,110,085.

▲ **Ill., Westchester**—SCHOOL—Christian Bros. [illegible] Bishop of Chicago, N. Wabash, Chicago; plans by B. J. Knowles, Commerce Bldg., St. Paul, Minn.; 1 story brothers residency, 2 story brmt. high school and residences. $1,100,000.

▲ **Tex., San Antonio**—JAIL—Bexar County [illegible], Courthouse; plans by Wachner & Wachner, Alamo Natl. Bank Bldg.; county jail. $3,850,000. CD 6/4.

▲ **N. Y., Farmingdale**—SCHOOLS—Bd. Educ. voted bonds June 2; Junior High School and elementary school. $4,255,700. CD 4/16.

▲ **N. Y., New York**—ARCHIVES & RECORDS—Dept. P. Wks., Municipal Bldg., Zone 7; Proj. PW-256, Archives and Records Bldg., Madison St. and Pearl St. and St. James Pl. $5,000,000. Praeger-Kavanagh-Waterbury, 126 E. 38th St., Zone 16, consult. engrs. To go ahead after 1959.

▲ **N. Y., New York**—NURSES' RESIDENCE, etc.—Dept. P. Wks., Municipal Bldg., Zone 7; plans by Crow, Lewis & Wick and Prince, 200 Fifth Ave., Zone 10; Proj. HO-232, nurses residence and school, East Bronx Municipal Hospital Center for Department of Hospitals. $6,550,000. Joseph R. Loring, 101 W. 47th St., Zone 19, mechanical engrs. To go ahead 1961. CD 2/4/43.

COMMERCIAL BUILDINGS

▲ **Calif., San Francisco**—PALACE MARKET—Dr. Simon Carter & Tom Giannini, c/o Skidmore & McWilliams, archts., Pier 46-B, San Francisco; Crystal Palace Market, Webster, Buchanan, Fulton and Grove Sts. $4,000,000.

▲ **Colo., Denver**—APARTMENTS—University of Denver Campus, will not construct two 12 story apartments with underground parking and swimming pool, ten 12 story office, two 1½ story bldgs., group research type bldgs. on land at South Colorado Blvd. and Evans. $10,000,000. Project abandoned. Property now zoned for 1 family house. CD 11/25.

▲ **Hawaii**—HOTEL—Inter-Island Resorts, 305 Royal Hawaiian Ave., Honolulu; hotel and resort near Lihue, Island of Kauai. $3,000,000. CD 11/21.

INDUSTRIAL BUILDINGS

▲ **Ala., Bessemer**—PLANT—W. S. Dickey Clay Mfg. Co., 2131 29 Ave. N., Birmingham; plant by Rust Engineering Co., 2316 5 Ave. N., Birmingham; pipe mfg. plant. $3,500,000. CD 11/19.

▲ **Calif., Los Angeles**—REFORMER—Union Oil Co., Union Oil Center, Los Angeles, Zone 17; (1) 14,000 bbl. per day catalytic reformer to produce high octane gasoline blending component, (2) 17,400 bbl. per day unifiner to pre-treat the feedstock to new catalytic reformer, (3) 4,000 bbl. per day unifiner to upgrade heavy catalytic cracked gasoline stock, (4) 10,000 bbl. per day diesel unifiner to remove nitrogen and sulphur compounds and imprv. color stability and cetane of mid barrel production, carbon monoxide boiler to reduce the quantity of carbon monoxide emitted to the atmosphere. $17,000,000.

▲ **Ind., Mount Vernon**—PLANT—General Electric Co., 1 River Rd., Schenectady 5, N. Y.; "Lexan" heat resistant plastic plant near here.

▲ **Okla., Pryor**—PLANT—Oklahoma Cement Co., Beacon Bldg., Tulsa; cement plant. $7,076,000.

UNCLASSIFIED

▲ **Calif., Sonoma**—GRANDSTAND—Sonoma County, Courthouse; plans by J. Clarence Felciano, P.O. Box 424, Santa Rosa; grandstand, Sonoma County Fair grounds. $1,000,000.

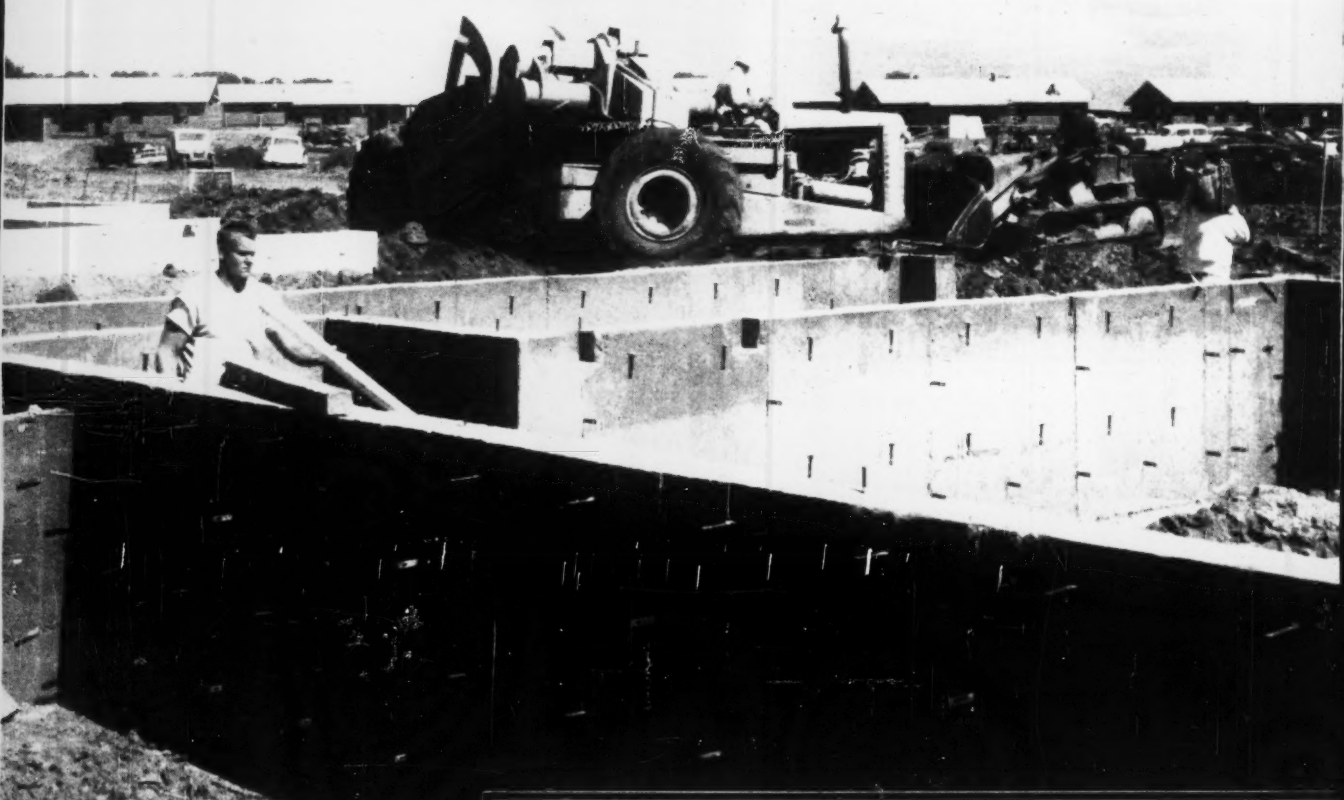
▲ **Kansas-Nebraska-South Dakota**—PIPE LINE—Kanef Pipe Line Co., 3431 W. Alabama St., Houston, Tex.; 246 mi. 6 in. pipe line from Phillipsburg, Kan. to Fairmont Terminal near Geneva, Neb. and to Yankton, S. D. $4,000,000. Pipe Line Technologists, 3431 W. Alabama St., Houston, Tex., engrs.

O., Cleveland—FOOTBALL PRESS BOX—City, City Hall, Zone 14; football press box at municipal stadium. $100,000. CD 2/7/58.

▲ **O., Toledo**—RECREATION FACILITIES—City, City Hall, referendum on 1-mill tax at Oct. 6 election, recreation facilities. $4,000,000. CD 6/9/54.

Texas—RURAL DISTRIBUTION LINES—North Plains Electric Co-operative, Perryton; rural electric distr. line extens. and rehabilitation, Perryton area. $200,000.

The WHY and the HOW of



Maneuverability — as D 'Pull demonstrates in spreading on the turn — gives this 9-yd scraper the edge over larger machines in subdivision work. Owner Ralph N. Budelman is moving 3,000,000 yd at Elk Grove Village near Chicago, Ill., on a 3 to 4-year contract. Meanwhile, his mobile, roadable-without-permit Model "D's" are available for quick shifts to other jobs.

Push-loaded D 'Pull picks up heaping load at the 6,000-home Elk Grove Village project. Budelman always uses a pusher to get maximum advantage from scraper's capacity. Working without pusher, versatile "D's" can self-load up to 6 yd average dirt in 30 to 40 seconds.

High speed on short hauls cuts cycle time — another advantage in maneuverability, and another reason why D 'Pulls are often superior to larger scrapers in subdivision work. Low-pressure tires make "D's" safe to operate on newly-paved streets. Even with a full load, "D's" roll up and over concrete slabs and curbs without doing damage.

successful small-yardage earthmoving

as told by Ralph N. Budelman

One big-yardage job a season — or a lot of small ones?

A contractor with a growing business has to make a big decision, sooner or later. Should he aim for "million-dollar" contracts, with their big machinery, manpower, and planning problems? Or should he keep a simple, compact working set-up and contract for a lot of small-yardage work?

Some go for the big, season-long jobs and do very well. Others find that a season of many small jobs is more to their liking . . . for example, Ralph N. Budelman of North Lake, Illinois. Here Ralph tells why he decided on small-yardage work and how he makes it pay.

Why did I pick the small-yardage business? Well, it's not because of a shortage in big contracts. Up here in the Chicago area, we've got tollways and expressways all over — built, building, or just on blueprints. There's plenty of money to be made on big work if you're equipped to take the headaches and risk involved.

Years ago, I decided to specialize in small-yardage work. We've got a booming suburban area here, with all kinds of dirtwork to be done. New streets are being laid out, thousands of new homes are going up, and many businesses are relocating.

That means lots of small jobs . . . like a 5,000-yd contract with a week's time limit. "Big" jobs too, but in small installments, spread out over the years. I'm working one now — a 3,000,000-yd total assignment for Centex Construction. They're building 6,000 new homes, a shopping center, and a park at Elk Grove Village. I've been moving dirt there for a year, one section at a time, and I'll be working there 2 or 3 years more. At the same time, I'm doing plenty of side jobs.

Switch jobs on short notice

I can operate this way because I have flexible equipment — roadable, fast, high-production rigs to run from one job to another on short notice. All 6 of my scrapers are LeTourneau-Westinghouse D Tournapulls*. I can road them without a permit; they're within all the width and axle-load limits. "D's" have speed — close to 30 mph on the highway. And they carry big loads for their size . . . up to 9 yd of solid pay dirt.

When a quick bid is asked for, I'm ready. For example, a food warehouse suddenly came up with a "crash project" — 40,000 yd had to be moved in a hurry. I entered my bid on a Thursday — had my 6 Model "D's", 2 pushers, a roller, and a grader, on the job the following Tuesday. It was a madhouse, but that dirt really flew.

Must move around fast

Most small jobs have a "crowding" problem . . . buildings on the site, either finished or under construction. I find that D 'Pulls* maneuver easily in and out, around foundations, piles of lumber, and pallets of brick, with little loss of speed. This keeps production rolling.

You might think that I'd move more yards with only 3 or 4 scrapers of larger capacity, but on these short-haul, crowded spreads, I don't believe so. I've made a lot of weight and time studies on my "D's" and on this type of work, they're tops.

Am I fully satisfied? Well, I bought my first "D" in '52 . . . and I'm still buying them.

See the 138-hp, 9-yd D Tournapull. Check its performance on your type of work. Ask for a "no-obligation" demonstration at your convenience.

*Trademark DP-2046-DCJ-2

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A Subsidiary of Westinghouse Air Brake Company

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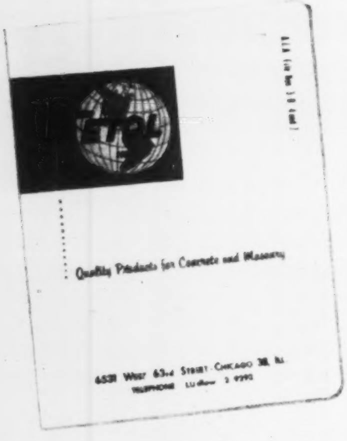

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MIDDLE ATLANTIC

HEAVY CONSTRUCTION—LB & CA

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

Conduit & Foundation Corp., 158 N. 20 St., Phila., Pa., CA **$2,128,783,** constr. bridges and incidental paving .074 mi. Rte. 80, Sect. 2E, from U.S. Rte. 46 to Landing Rd. in Netcong Borough and Roxbury Twp., Morris Co. Bids May 27. Awarded June 17. CD 6/2, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton,

George M. Brewster & Son, 275 W. Fort Lee Rd., Bogota, N. J., CA **$3,888,039,** grading, paving and bridges 2.608 mi. Interstate Rte. 287, Sects. 1C and 2B, from Weston Canal Rd. to River Rd. interchange in Franklin and Piscataway Twps., Somerset and Middlesex Counties. Bids June 4. Awarded June 17. CD 6/8, under LB.

▲† **Lane Constr. Co.**, 965 E. Main St., Meriden, Conn., LB **$2,036,464** (6 bidders), apron operational, aircraft maintenance dock relocation, AV fuel facilities John R. Towers Field. ENG-49-080-59-47 (48) and ENG-49-080-59-49 (51). ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. Bids June 17. CD 5/20.

Steiner Constr. Co., 2122 Maryland Ave., Baltimore, Md., CA **$532,000,** athletic fieldhouse and swimming pool covering. GARRETT PARK, MD. Georgetown Preparatory School, Garrett Park, Md. Bids June 3. CD 6/9, under LB.

▲ **Malan Constr. Co.**, 2 Park Ave., New York, N. Y., LB **$2,787,000** (5 bidders), Contr. 2311-W. Potomac River water supply development, Watts Branch incl. constr. filtering unit, flocculation and sedimentation basin, head house and pertinent structures, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids June 17. CD 5/20.

▲† **Danish Arctic Contractors**, 271 North Ave., New Rochelle, N. Y., LB **$4,050,020** (2 bidders) (a) Avgas base storage (CY-59) (b) base bulk supply warehouse facility addn. (CY-59) (c) base theater (CY-59) (d) bread bakery (CY-59) (e) eastern extension Dew Line Support Facilities (CY-59) (1) composite bldg. (CY-59) (2) 70 men dormitory (CY-59) (3) garage (CY-59) (4) bulk fuel storage (CY-59) (5) radio communications bldg. (CY-59) at Soundrestrom Air Force Base, (BW-8). ENG-30-347-59-28. GREENLAND. U. S. Eng., 346 Broadway, New York 13, N. Y., U. S. A. Bids June 11. CD 6/5.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg. Bids opened 6/12.

Pa.—**Ralph Myers Contg. Corp.**, Box 125, Pitcairn, Pa., LB **$4,762,863** (11 bidders) 19,213 ft. divided hy. rein. c. conc. 24 ft. wide each side 4 ft. concrete divisor, 8 bridges, section Butler By-Pass, T.R. U.S. 422, Butler and Summit Twps., Butler Co.

Pa.—**James D. Morrissey, Inc.**, 9119 Frankford Ave., Phila. 14, Pa., LB, **$92,462** (8 bidders) 5,695 ft. crushed aggreg. base with bit. surf. 18 ft. wide, 1 bridge, L.R. 48101 (1), Bushkill and Plainfield Twps., Wind Gap Boro, Northampton Co.

Pa.—**Blue Mountain Constr. Co.**, Grantville, Pa., LB **$142,988** (3 bidders) 4,101 ft. crushed aggreg. base with bit. surf. 22 ft. wide, L.R. 58057 (5), Hamilton Twp., Tioga Co.

Pa.—**Ryan Bros., Inc.**, Clearfield, Pa., LB **$385,131** (2 bidders) 12,666 ft. rein. c. conc. 24 ft. wide, 1 bridge with alt. superstructure, L.R. 61029 (1), Pine Grove Twp., Warren Co.

Pa.—**Jos. Ciccone & Sons, Inc.**, Ivyland Rd., Ivyland, Pa., LB **$136,965** (5 bidders) 3,451 ft. crushed aggreg. base with bit. surf. variable in width, 1 bridge, L.R. 39028 (3), S. Whitehall Twp., Lehigh Co.

Pa.—**New Enterprise Stone & Lime Co., Inc.**, New Enterprise, Pa., LB **$89,878** (5 bidders) 2,190 ft. crushed aggreg. base with bit. surf. 18 ft. wide, 1 alt. superstructure bridge, T.R. 10, Rayne Twp., Indiana Co.

Pa.—**James J. Skelly, Inc.**, Media, Pa., LB **$179,473** (7 bidders) 5,302 ft. crushed aggreg. base with bit. surf. 24 ft. wide, L.R. 23050 (1), Haverford Twp., Delaware Co.

Pa.—**Truman E. Horner**, 297 Market St., Highspire, Pa., LB **$394,127** (10 bidders) 14,190 ft. crushed aggreg. base with bit. surf. 22 ft. wide, L.R. 22021 (4), Lower Paxton Twp., Dauphin Co.

Pa.—**The Interstate Amiesite Corp.**, Concordville, Pa., LB **$172,846** (3 bidders) surf. 44,769 ft. exist. road with bit. surf. 22 ft. wide, T.R. 442, Pine, Greenwood, Muncy, Moreland and Franklin Twps., Columbia and Lycoming Counties.

Pa.—**Irving N. Loomis & Sons**, Montrose, Pa., LB **$250,976** (5 bidders) 5,881 ft. crushed aggreg. base with bit. surf. 20 ft. wide, 2 bridges, alt. superstructure, T.R. 187, Windham Twp., Bradford Co.

Pa.—**Brayman Constr. Corp.**, 2 Canterbury Rd., Pittsburgh 2, Pa., LB **$417,128** (5 bidders) 7,011 ft. crushed aggreg. base and bit. surf. 18 ft. wide, 3 alt. superstructure bridges, L.R. 02164 (1), Etna Boro, Shaler Twp., Allegheny Co.

Pa.—[illegible] no bids June 12, 2,300 ft. crushed aggreg. base with bit. surf. 18 ft. wide, T.R. 651, Big Beaver Twp., Beaver Co. Will readvertise. CD 5/14.

KERN INSTRUMENTS
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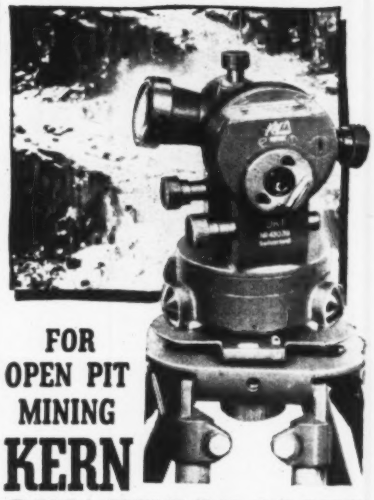
for the JOB



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Down-to-fundamentals design . . . made for portability, rugged use . . . Precision results in simplest, quickest way.

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120 Grand St., White Plains, N.Y.

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Miami—BA 7/1—City, City Hall, Dinner Key, Parkway sanitary sewer impv. SR 5021 S & C S W section, $340,000. Plans deposit $10. CD 9/28/56.

La., Jackson—BA 7/6—Town, Town Hall, (A) sewerage collection sys. (B) sewage treatment plant. Plans deposit $25. Porter, Barry & Assn., Box 1708, Baton Rouge, La., engrs. CD 8/12/57.

La., Slidell—BA 7/7—Town, Town Hall, water distr. sys. imprvts. Plans deposit $20. Carnegie & Smith, 3000-A, Dalrymple Dr., Baton Rouge, La., engrs.

La., Welsh—BA 7/7—Mayor & Bd., Town Hall, completing water treatment plant, trunk main. Plans deposit $15. Frommherz Engineers, 816 Howard Ave., New Orleans, La., engrs.

† **Fla., Orlando**—OFFSITE SUPPORT FACILITIES—BA 7/8—Air Force Contracting Dpt., Base Procurement Office, McCoy Air Force Base, offsite support facilities, McCoy Air Force Base, ENG-08-617-59-65. CD 9/24.

N. C., Lincolnton—BA 7/8—City, City Hall, 23,700 lin. ft. 8-15 in. VC sanitary sewer lines $150,000. Plans deposit $15. W. K. Dickson & Co., Inc., 404½ S. Tryton St., Charlotte, engrs.

† **Louisiana**—BA 7/14—U. S. Eng., foot of Prytania St., New Orleans, La., dredging 18 ft-140 ft access channel, Mississippi River Gulf Outlet, Bayou Dupre to Bayou Yscloskey, St. Bernard Parish. Inv. 59-228. CD 4/22/44 under Illinois-Louisiana.

† **Kentucky**—BA On or About 7/21—U. S. Eng., P. O. Box 2127, Huntington, Zone 18, W. Va., relocations for local backwater protection project, Russell for Greenup Locks and Dam Project. CIVENG 46-022-59-88. CD 12/15/58.

† **Miss., Greenville**—INSTRUMENT LANDING SYS.—BA 7/23—U. S. Eng., P. O. Box 1169, Mobile, Ala., instrument landing sys., Greenville Air Force Base ENG-01-076-59-118B. CD 8/23/56.

HEAVY CONSTRUCTION—LB & CA

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Zone 5. Bids opened 6/16.

W. Va.—**R. B. Tyler Co.**, 1446 Levering St., Louisville, Ky. LB **$1,576,893**, grading, draining, c/ conc. pavement, structures, sewer relocation 1.71 mi., Glendale Narrows-McMechen Rd. on W. Va. Rte. 2, Proj. F. 234(7), Marshall Co.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ind., Gary**—BA 7/8—Bd. Sanitary Comm., City Hall, sewer imprv. reconstr. East side sewer and relief sewer sys., $2,000,000. Plans deposit $200. Hurst Roche Engr., 511 S. Main St., engr. Bids June 10 rejected. CD 5/20.

▲ **Wis., Milwaukee**—BA 7/3—City, City Hall, 15 m.g. underground water storage basin, Howard Ave., $1,230,000. Plans deposit $10. Black & Veatch, 1500 W. Meadow Lake Parkway, Kansas City, Mo., engrs. E. A. Schmidt, city engr.

Illinois—BA 7/14—Gulf, Mobile & Ohio R.R. Co., S. A. Cooper, chf. engr., 104 St. Francis St., Mobile, Ala., approaches to GM&O Bridge 216 over Calumet-Sag channel near Lambert 21.6 mi. south of Chicago. Plans deposit $25. Extended date CD 6/3.

▲ **Ill., Lewistown**—SCHOOL—BA 7/8—Bd. Educ., Community High School Dist. 341, 90,000 sq. ft., masonry walls, steel joist, concrete floor slabs, etc., high school **$1,049,000**. Plans deposit $30—Atkins, Barrow & Graham, Inc., 102 E. Main St., Urbana, archts., Brown, Manthei, Davis & Mullins, 1815 S. Neil St., Champaign, mech. engrs. CD 6/19, under Lewiston Pub. Schools as owners.

▲ † **Mich., Kinross**—HOSPITAL—BA 7/15—U. S. Eng., 1101 Washington Blvd., Detroit, hospital, Kinross Air Force Base. ENG-20-064-59-84. $1,910,000. Smith, Hinchman & Grylls Assoc., Inc., 3107 W. Grand Blvd., Detroit 2, Mich., archt. CD 6/8.

HEAVY CONSTRUCTION—LB & CA

▲ **H. H. Hall Constr. Co.**, 211 S. 15th St., East St. Louis, Ill., CA **$1,871,204.** Section 1-Z bridge approaches East St. Louis Expressway along 3rd St. between Ill. and Missouri Ave. connecting expressway with Veterans Memorial Bridge, EAST ST. LOUIS, ILL. City, City Hall, East St. Louis, Ill. Bids June 3, awarded June 12. CD 6/10, under LB.

MISS TO ROCKIES

HEAVY CONSTRUCTION—LB & CA

▲ **IOWA**—State Hy. Comn., Ames,

Iowa—**Fred Carlson Co.**, Hy. No. 9 East, Decorah, Iowa. CA **$2,275,666**, c. conc. 6.516 mi. I-IG-35-3(3)177, Polk Co. Bids June 2. Grand total, $2,906,343.

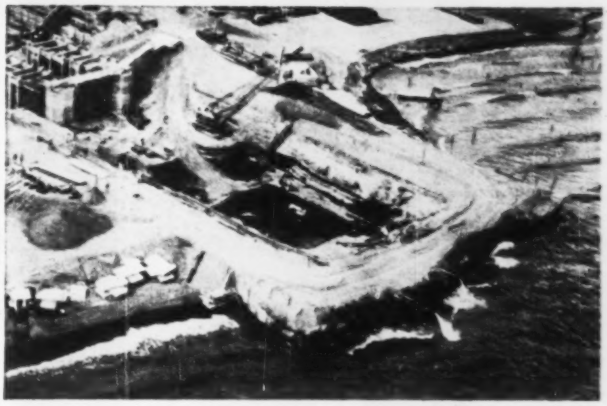
Iowa—**Booth & Olson, Inc.**, 529 Ins. Exch. Bldg., Sioux City, Iowa. CA **$630,677**, c. conc. pavement and wid'n. 8.379 mi., FN-70, Mahaska Co. CD 6/5, under LB.

How to handle WET JOBS #47 of a series

Project:
Power Plant, Managua, Nicaragua

Contractor:
The H. K. Ferguson Company, Inc.

Pumping Contractor:
Wellpoint Dewatering Corp.



IN NICARAGUA'S VOLCANIC soil, a Griffin wellpoint system lowers 32 ft of water. Excavated material is used to build a dike (see photo) which protects work area from Lake Managua's waves. No sheeting needed here — excavation open-cut.

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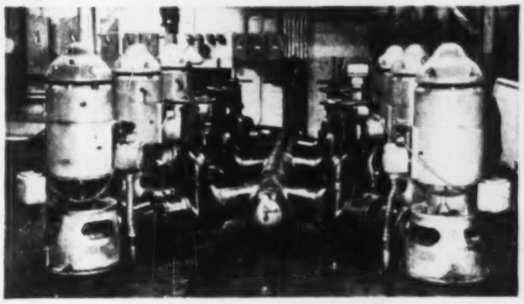

3 times the capacity in one-third the space...

Johnston VERTICAL Pumps

You can put SIX vertical Johnstons in the same space needed for just TWO horizontals — and get 3 times the pumping capacity.

VERTICALS ARE VERSATILE, TOO: Primary water supply, sumps, pipe lines, refineries, condenser lines and boosters, circulating, dewatering, volatile fluids, cooling towers.

For complete details on these space and money savers, send for colorful bulletins.

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A Division of the
Youngstown Sheet and Tube Company
PASADENA, CALIF.

Johnston Pump Co.
Bin K, Pasadena, Calif.
Send complete information on industrial applications:
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Address ____________
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McCarthy Improvement Co., 602 Kahl Bldg., Davenport, Iowa, CA **$92,519**, (2 bidders), b. conc. resurf. various avenues and streets, BURLINGTON, IOWA, City, City Hall, Burlington, Iowa. Bids May 28.

Normoyle & Berg Co., 2223 11 St., Rock Island, Ill., LB **$205,442**, (3 bidders), sanitary sewers, LB **$203,500**, sewage treatment plant, WILTON (Wilton Junction P. O.), IOWA, Town, Town Hall, Wilton, Iowa. Bids May 26. Federal Engineering Co., 703 Putnam Bldg., Davenport, Iowa, engr.

BUILDINGS—LB & CA

▲ **McGough Constr. Co.**, 1172 Selby Ave., St. Paul, Minn., CA **$1,503,000**, 1 story CLASSROOMS, GYMNASIUM, TOWER, CHAPEL, CONVENT, MINNEAPOLIS, MINN. St. Margaret's Academy, 1301 Linden Ave., Minneapolis, Minn. Bids May 22. CD 5/28, under LB.

▲ **Semate-Waters Constr. Co.**, 224 18 St., Rock Island, Ill., LB **$1,141,181**, est. $1,750,000, HIGH SCHOOL, PLEASANT VALLEY, IOWA. Pleasant Valley Twp. School Dist., Pleasant Valley, Iowa. Bids May 25. CD 5/13.

▲ **C. Rallo Contg. Co., Inc.**, 5000 Kemper Ave., St. Louis 9, Mo., CA est. **$1,000,000**, 8 story above and 2 levels below ground, Clayton Inn addn., Bonhomme Ave., CLAYTON, MO. Bernard Development Corp., and Clayton Inn Inc., both 111 S. Meramec, Clayton 5, Mo. Bids June 10. CD 5/27.

FAR WEST

HEAVY CONSTRUCTION—BA

Wash., Marysville—BA 7/6—Town, Town Hall, 4,140 ft., 16 in. - 24 in. cement asbestos interceptor sewer line, 12 x 20 ft., rein.-conc. underground pump station and 36-acre sewage treatment lagoon, $230,000. Plans deposit $15. Hammond, Collier & Isaac, 4010 Stone Way, Seattle, Zone 3, engrs. CD 2/26/58.

Ariz., Tempe—REFRIGERATION SYSTEM—BA 7/7—Arizona State University, central refrigeration system and tunnel system, science centers and addns. at Arizona State University, $700,000. Kemper Goodwin, Tempe, archt. CD 8/27/57 under public bldgs.

▲ **Alaska**—BA 7/8—City, City Hall, two 3,750 kva hydraulic turbines, two 48 in. butterfly valves, two 3,750 kva horizontal generators, six 2,500 kva transformers, 2 transformer stations and 5 mi. 33 kv transmission line, Blue Lake Hydro Project. CD 3/20/57.

NEW PORTABLE PAVEMENT DRILL BY ACKER

SPEEDS HIGHWAY CORE TESTING

65 CORES A DAY WITH HIGH SPEED ACKER DIAMOND BIT

- Full 360° angle drilling
- Hydraulically operated leveling jacks
- Adjustable core barrel guide
- Integral pump and 100 gallon water tank

In routine operation, Acker's new highway test core drill using special Acker thin-wall diamond bits is producing 65 or more quality test cores per 8 hour shift.

Trailer mounted for portability, this new rig features a 100 gallon water tank and pump; a new built-in core barrel guide that saves time; hydraulic leveling jacks that simultaneously level the rig regardless of road contour; and dozens of valuable, exclusive features.

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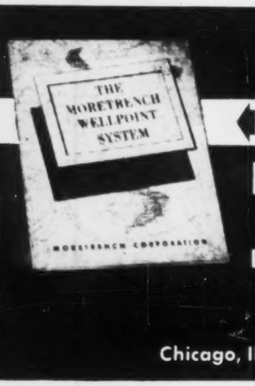

WET JOB?

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World's Oldest, Largest and Most Experienced Predrainage Organization

Main Office & Plant: Rockaway, N. J.

Chicago, Ill., Tampa, Fla., Houston, Tex., Hackensack, N. J.

Washington—BA 7/10—Chelan County Public Utility Dist., 327 N. Wenatchee Ave., Wenatchee, furnishing sluice gates, hoists and guides for Rocky Reach Dam. Stone & Webster Engr. Corp., 49 Federal St., Boston, Mass., engr. CD 2/2/55.

HEAVY CONSTRUCTION—LB & CA

Wash., Spokane—HOME FOR CHRONICALLY ILL—BA 6/25—Dominican Sisters of Kettle Falls, E. 929 Boone St., 2 story, 46,215 sq. ft., rein.-conc. home for chronically ill, $950,000. J. W. Maloney, Central Bldg., Seattle, Zone 4, archt. CD 12/31.

Calif., Los Angeles—SCHOOL—BA 7/1—Bd. Educ., 1425 S. San Pedro St., Narbonne High School addn., Harbor City, 24300 Western Ave., $400,000. Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., archts. CD 6/9/58.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, bids opened 6/17,

Morrison Knudsen Co. Inc., Hoge Bldg., Seattle, Wash., LB **$4,912,329**, (12 bidders) grading, surf. 7.5 mi. 4 lane freeway U.S. 101 between Myers Flat and 0.6 mi. south of Dyerville, 2nd unit Redwood Freeway incl. 4 bridges. 1-Hum-1-C; Humboldt Co. CD 5/13.

▲ **Young & Anderson**, P. O. Box 68, Brea, Calif., LB **$14,975,491**, constr. first sect., 33 mi. 87-in. diam. 3rd Mokelumne Aqueduct from the Sierra Nevada to East Bay, OAKLAND, CALIF. East Bay Municipal Utility Dist., 2130 Adeline St., Oakland, Calif. Bids May 8. CD 3/12.

BUILDINGS—LB & CA

▲† **D. O. Norton & Sons**, 2802 N. 16, Phoenix, Ariz., CA **$1,391,700** Papago Indian HOSPITAL, living quarters for staff, SELLS, ARIZ. Bureau of Indian Affairs, Dpt. Interior, P. O. Box 1777, Albuquerque, N. M., awarded June 15. CD 6/17 under LB.

▲ **Moore Homes No. 2 Inc.**, 1250 S. Main St., Santa Ana, Calif. Owner builds **$1,129,422**, 82 stucco DWELLINGS, Tr. 3388 between Lincoln Crescent Ave., BUENA PARK, CALIF. McDaniel Engrg. Co., 222 E. Center St., Anaheim, Calif., archts.

▲ **Sturtevant Co.**, 19752 S. W. Acacia St., Santa Ana, Calif., CA **$1,192,050**, 62 DWELLINGS, Tr. 1896, NEWPORT BEACH, CALIF. First Western Corp., 998 Dover St., Newport Beach, Calif.

CANADA

BUILDINGS—LB & CA

▲ **Manson Bros. Ltd.**, 7987 Macpherson Ave., Burnaby, B. C., CA **$1,060,554**, 100 frame and stucco DWELLINGS, COMOX, B. C. Central Mortgage & Housing Corp., Vancouver, B. C. Bids April 21, awarded June 11. CD 5/7, under LB.

▲ **Bennett & White Co. Ltd.**, 660 Howe St., Vancouver, B. C., CA **$1,561,300**, steel and concrete HOSPITAL, DAWSON CREEK, B. C. St. Joseph's General Hospital, Dawson Creek, B. C. Awarded June 10. CD 5/6, under LB.

▲ **Bennett-Pratt Ltd.**, 5 Maple Leaf Dr., Weston, Ont., LB **$1,069,756**, 85 x 160 ft. frame block concrete Runnymede Senior Public SCHOOL addns. and alterations, TORONTO, ONT. Bd. Educ., 155 College St., Toronto, Ont. Bids June 4. CD 5/18.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Thompson-Cornwall Inc.**, 405 Lexington Ave., New York, N. Y., U. S. A., CA **$1,400,000** POWER HOUSE, Fifth of November Hydro-electrical Project, Lempa River (Unit 4), EL SALVADOR. Hydroelectric Comm., Edificio Duenas, 407, San Salvador. Bids May 1. CD 5/28 under LB.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **J. A. Jones Constr. Co.**, 350 Broadway, New York, N. Y., U. S. A., CA $31,900,000 military bases for Iranian Army, IRAN. U. S. Dist. Army Engineers, Tehran, Iran.

Iino Shipbuilding & Engineering, Tokyo, Japan, CA **$20,000,000** acetylene and ethylene section of chemical PLANT, JAPAN. Kyowa Fermentation Industry, Ube, Japan. Teark Engineers, 4617 Cole Ave., Dallas, Tex., U. S. A., consult. engrs.

▲ **Iino Shipbuilding & Engineering**, Tokyo, Japan, CA **$6,000,000** synthesis gas PLANT, JAPAN. Nitto Chemical Industry, Tokyo, Japan. Teark Engineers, 4617 Cole St., Dallas, Tex., U. S. A., engrs.

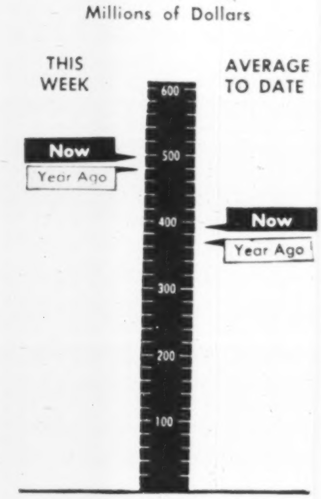
U. S. POSSESSIONS

HEAVY CONSTRUCTION—LB & CA

Fruin-Colnon International S. A. and LeBoeuf Dougherty Inc., [illegible] U. S. A., CA **$2,943,961** [illegible] Balboa, CANAL ZONE. Panama Canal Co., Balboa, Canal Zone. Bids June 12. CD 6/17 under LB.

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

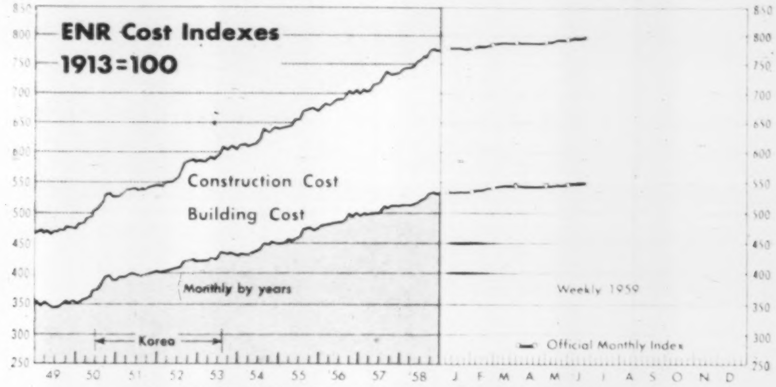
	This Week	Cum. 26 wks 1959	Chge '58-'59
	millions		%
All Heavy Constr.	$491.9	$10,347.8	+ 7
By Ownership			
PRIVATE	250.7	5,031.6	+21
PUBLIC	241.2	5,316.2	− 3
State & Municipal	201.8	3,750.1	− 6
Federal	39.4	1,566.1	+ 7
By Type of Work			
PUBLIC			
Waterworks	12.2	219.5	+39
Sewerage	13.1	326.7	+ 7
Bridges*	15.0	306.7	+ 1
Highways	102.9	1,574.7	+ 2
Earthwork, Waterways	20.0	130.4	−29
Buildings			
Excl. Housing	51.1	1,359.2	+ 4
Housing	8.7	393.3	−33
Unclassified	18.3	708.9	+ 7
PRIVATE			
Buildings			
Mass Housing	145.4	2,341.3	+22
Commercial	35.2	1,117.4	+11
Industrial	66.5	1,357.1	+37
Unclassified	3.5	212.6	−13

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of June 18	Cum. 25 wks 1959	Chge '58-'59
	millions		%
Corporate Securities	$48.1	$2,107.1	−24
State and Municipal:			
All Except Housing	57.9	3,087.6	−12
Housing	....	30.6	− 9
Federal Loans	....	66.6	−27
Federal Aid	....	18.0	....
Total Nonfederal	$106.0	$5,309.9	−17
Federal Appropriations:			
Projects in U. S.	....	$38.3	−94
Outside U. S.	....	....	....
Total New Capital	$106.0	$5,348.2	−24



CURRENT COST INDEXES

ENR INDEXES (1913 = 100), 20-cities' average	Week of June 18 1959	% Change from May 21 1959	% Change from June 19 1958
Construction Cost	799.17	+0.5	+5.4
Building Cost	549.91	+0.4	+5.3

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080, Building Cost by 1.850.
1939 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	May 1959 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$114,608	+0.01	+2.2
By Ownership—			
Private	49,772	+0.4	+4.7
State & Municipal	51,112	−0.1	+0.4
Federal	13,724	−0.9	+0.7
By Type of Work—			
Waterworks	2,688	−1.1	+0.8
Sewerage	3,632	0.1	+5.4
Bridges	3,369	−0.2	2.0
Highways	13,062	−0.9	−2.0
Earthwork, Waterways	11,736	−0.2	−1.0
Public Buildings	20,724	−0.2	+3.7
Industrial Buildings	17,068	−0.7	+2.8
Commercial Buildings	22,365	+1.1	+6.0
Unclassified, Private	10,339*	+0.8	+1.9
Unclassified, Public	9,626	+0.2	2.4

* Includes private bridges, $91 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1959 May	1959 5-months	Percent Change from '58 May	Percent Change from '58 Year Cum.
	(millions)			
Total U. S. (ENR reported)	$1,610	$8,629	+21.0	+22.3
By Ownership				
Private	1,030	4,540	+101.1	+50.1
State & Municipal	460	3,374	−35.2	−2.6
Federal	120	715	+57.4	+27.1
By Type of Work				
Waterworks	29	208	89.6	39.4
Sewerage	41	275	50.8	11.5
Bridges	15	217	−33.4	9.6
Highways	63	917	+43.9	+0.2
Earthwork, Waterways	8	104	−23.4	−19.3
Public Buildings	303	1,822	+11.9	+22.6
Industrial Buildings	372	1,527	+405.8	+159.2
Commercial: Mass Housing	362	1,347	+88.9	+46.6
Other Building	200	1,159	9.9	−15.4
Unclassified, Private	97	506**	+278.8	+246.7
Unclassified, Public	119	546	+76.1	−9.3

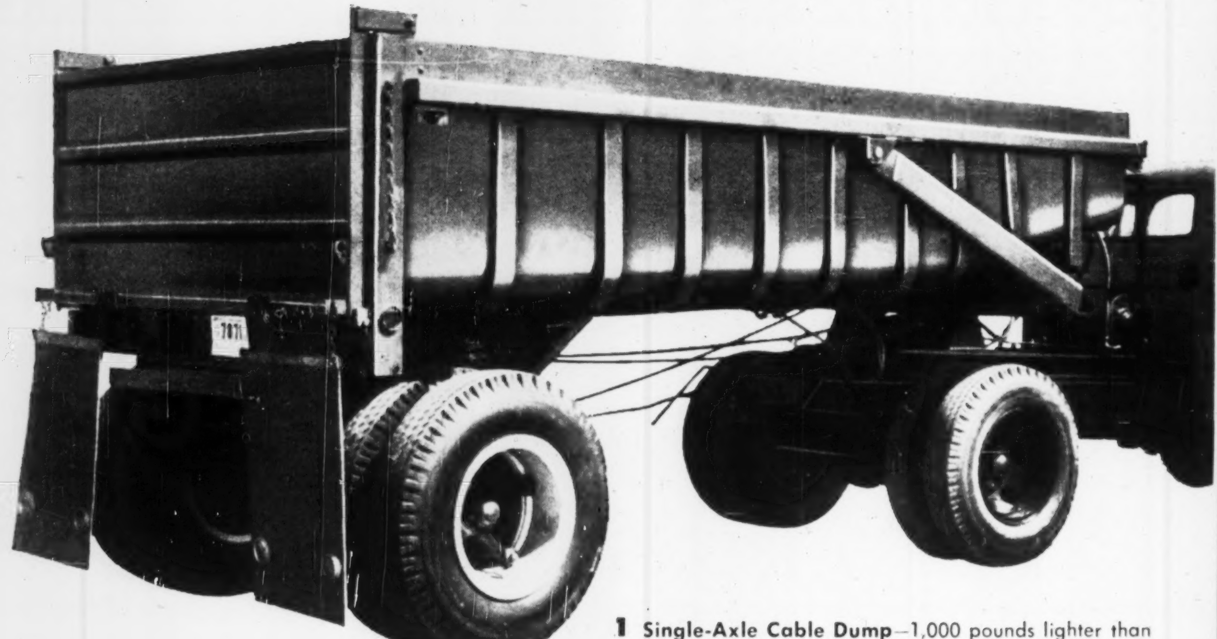
** Includes private bridges, $7.7 million

FLOW OF PROJECTS OUT OF THE BACKLOG INTO CONTRACTS

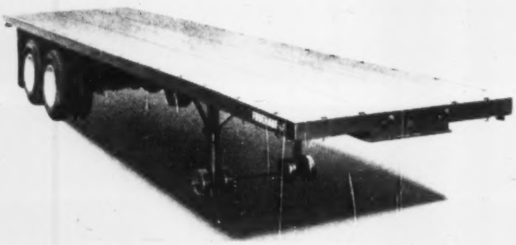
Total U. S. (ENR reported)	$975	$4,380	−21.2	+6.0
By Ownership				
Private	303	1,488	−14.8	+13.2
State and Municipal	431	1,900	−35.3	−12.0
Federal	241	991	−8.9	+50.8

POUND FOR POUND THE BIGGEST

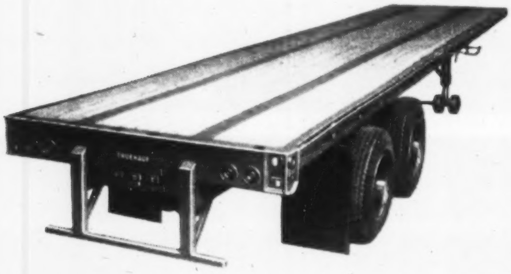
Fruehauf Builds The Only Complete Line of Construction Hauling Equipment



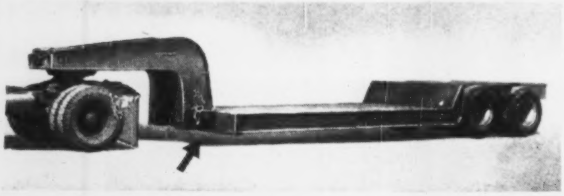
1 Single-Axle Cable Dump—1,000 pounds lighter than previous models, this Fruehauf-Schonrock Cable Dump is your choice for fast, efficient low-cost handling of gravel, sand and dirt. Tandem models and rock bodies available.



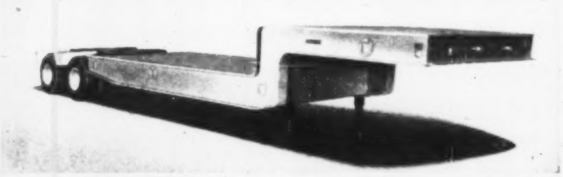
2 Multi-Purpose Platform—Ideally suited for hauling heavy building materials, light machinery, or bulky installations. Available in lengths from 27′ to 42′.



3 Workhorse Platform Trailer—If it can be moved you can haul it on a Fruehauf Workhorse Platform. Rugged, yet 1,200 pounds lighter than ordinary, earlier models.



4 Removable Gooseneck Carryall — These exclusive Fruehauf Removable Gooseneck Carryalls cut loading time for heavy construction equipment to *less than 15 minutes.*



5 Lightweight 35-Ton Carryall—This new lightweight, lower-cost carryall features wide frame design for better load distribution, shorter gooseneck for maneuverability.

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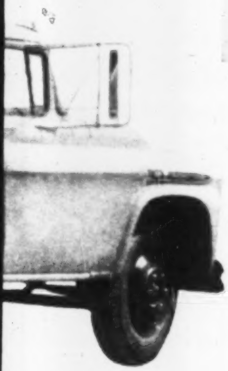
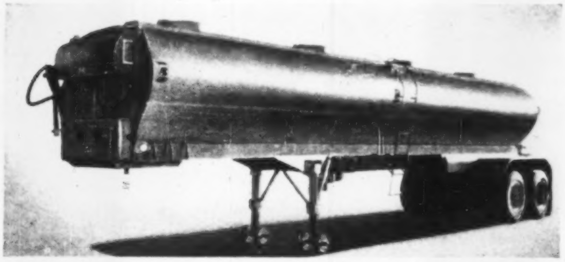
FRUEHAUF TRAILERS

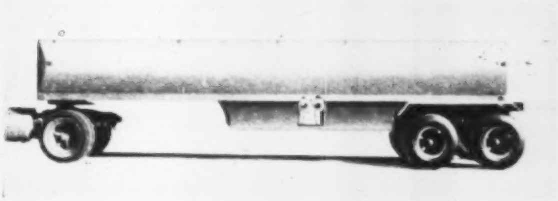


6 Frameless Aluminum Hoist-Type Dump—Also available in steel, with either single or twin-front mounted or under-mounted telescopic hoists.

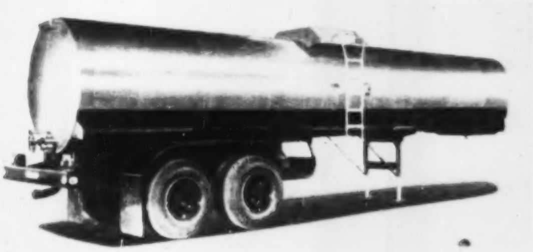


7 Screw-Type Bulk Cement Tank—Designed for faster discharge of cement and similar commodities. Available with either twin-screw or twin and-a-half conveyors.

For Over 45 Years No Fruehauf Unit Has Ever Been An "Orphan"



8 Hopper-Type Dump—For round-the-clock hauling of sand, gravel, or aggregates over all kinds of terrain. Has rugged frameless steel body, with steeply-pitched inner surfaces for faster, more uniform unloading.



9 Hot Commodity Tank—Whether your hot cargo is asphalt, road oil, or a similar commodity, the lower Trailer weight of Fruehauf tanks reduces per-ton hauling costs.

10 "Airslide"* Pressure Tank—Lower initial cost, faster unloading of aerated cement and barites, are two big features of Fruehauf's new "Airslide" Pressure Tank-Trailer.

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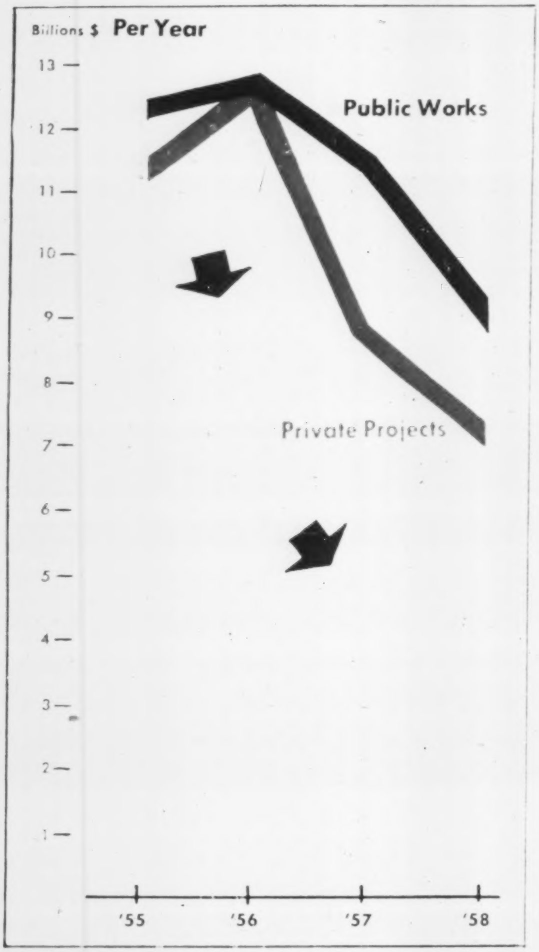
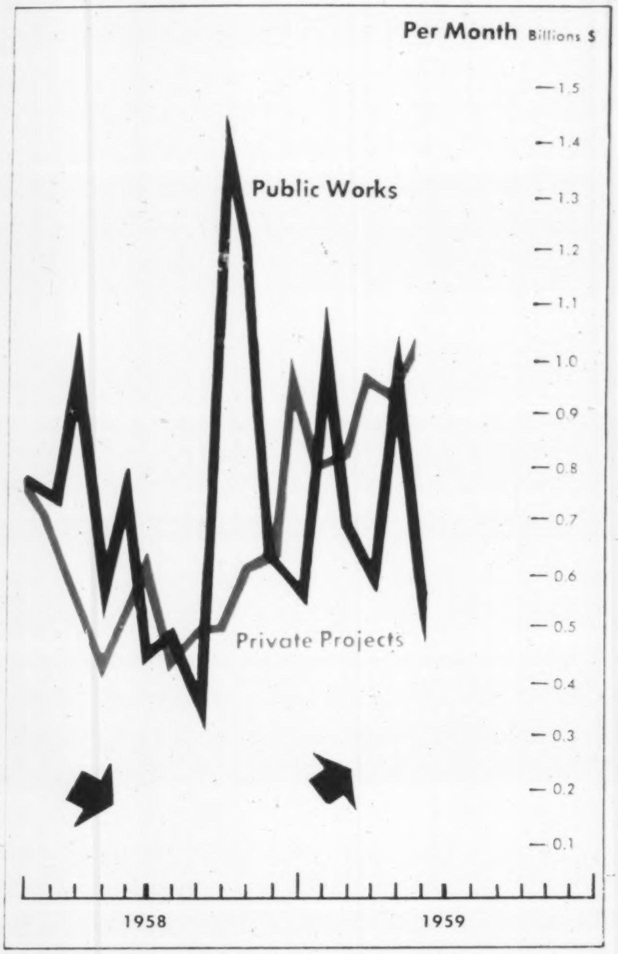


Proposed work began a long drop in '57



. . .Turned up in August, '58. And now . . .

Construction Plans Are Jumping

Owners are sending their proposals for new construction projects to the drawing boards in greater volume now than at any time since 1957.

The upturn started late last year, and has gathered momentum since then. Contract awards reflect this strength (ENR June 18, p. 41).

Moreover, there's no indication that the climb is a temporary spurt. The number of owners getting on the bandwagon continues to increase.

Most dramatic evidence of the increase in business of consulting engineers, architects and architect engineers is the sharp rebound in proposed private work.

Total estimated private work proposed in the first five months is $4.5 billion, ENR data show. That is a 50% increase over the low volume of a year ago and a 39% jump over the last five months of 1958 when the upturn was becoming apparent.

In May alone, $1 billion worth of private heavy construction work was proposed. And March and April each topped $900 million.

May's volume was more than double that of May 1958 and is in sharp contrast to the $457 million of July 1958.

Industrial building accounts for most of the increase in proposed private work. Volume of $1.5 billion in the first five months is 150% above the same months of last year.

Mass housing rose 47% to $1.3 billion in the first five months. "Unclassified" climbed 243%, to $498 million in the first five months. Most of the "unclassified" proposals are pipelines.

Commercial building projects moving into the planning stage dipped 15% to $1.2 billion from last year's first five months. However, there is no evidence of a decline starting here.

Public works proposals are also flowing into the planning stage faster than a year ago. However, all of the 2% rise in proposed public works resulted from a 27% rise in federal projects of $715 million.

Proposed state and local projects totaling $3.4 billion are down 5% from the first five months of 1958. This is due to a lower volume of design work on heavy "non-buildings" construction. Proposed public buildings, including federal, rose 23% to $1.8 billion.

Meatpackers Need New Plants

Population shifts, improved roads and new techniques are bringing the meatpacking and processing industry into the construction market in new areas.

Chicago, once the center of the beef and pork industry, is rapidly losing its importance to the nation in this field. Centralization will give way to dispersal. Two of the nation's largest meat packers—Swift & Co. and Armour & Co.—will stop all Chicago slaughtering operations within two months.

The decline of this industry in Chicago was first signaled 10 years ago when Wilson & Co. dropped out of the area.

The decisions by Swift and Armour result from changing economic conditions, the rapid growth of short-haul truck transportation and modern, mechanized meat processing methods.

In addition to halting all livestock slaughtering in Chicago, Armour says it will cut back similar operations in six of its other 32 plants in the U. S. Armour cites several other basic reasons for its decisions. They include: obsolescence of buildings, many of which are 50 years old; declining receipts of livestock in certain markets; and excess production capacity in the meatpacking industry.

The company reports it was unable to make its Chicago operations profitable, even after spending $10 million for modernization.

Meatpackers say they must move closer to supply sources. Rather than ship livestock hundreds of miles to Chicago for processing in inefficient facilities, it is cheaper, they say, to construct small plants in key livestock-growing areas.

Armour will shift its slaughtering to plants with unused capacity in various regions. It has acquired four plants since 1957 and is constructing another in Houston. Construction is expected to start this year on a plant in Oklahoma City.

The new buildings will bear little resemblance to the multi-story structures erected 50 or more years ago. Then, most of the buildings were of millwork and brick construction, sometimes ten stories high. Many were built wall-to-wall, in blocks of a half dozen or so, and interconnected. Animals were killed on the top floor, and the various meat products moved in chutes or elevators to lower floors for processing. Workers used hand trucks for material handling.

Now almost all Armour's new structures are one story high, of tilt-up concrete construction. The animal is received and slaughtered at one end of the building, and completed meat products are shipped out the other end. Technological improvements also eliminate the need for vast storage areas for curing. Ham, for example, can be cured in seven days. It used to take 55 days. Overhead conveyors and tractors have greatly mechanized material handling.

A Breath of Life for Tollroads

A major and significant revival of interest in new tollroads is apparent in Oklahoma.

The lower house of the state legislature has approved a bill that would back new tollroad bonds with part of revenues received from motor fuel taxes.

The Senate has received the measure and is expected to add its approval. The bill also has the backing of Gov. J. H. Edmondson.

This thinking in Oklahoma is in sharp contrast to that generally prevailing when Congress approved the Interstate Highway System in 1956. It was then commonly believed that future construction of tollroads was doomed.

Oklahoma's move also supports current predictions that tollroads may again become an important part of the heavy construction market (ENR Apr. 16, p. 173).

Under the Oklahoma measure, the State Tax Commission would place 97% of motor fuel taxes collected along Oklahoma turnpikes into a trust fund. Maximum amount of such earmarking would be $1 million annually. It also calls for a trust fund build-up equal to three years' annual interest on bonds, up to $4 million.

The plan would help to make tollroad bonds more attractive to investors. It would provide an immediate cushion of funds behind new bonds and supply back payment of debt service.

State officials are considering construction of two toll turnpikes. One would be a southwest route extending from Oklahoma to Chickasha to the Texas border near Wichita Falls. The other would be an eastern route to take traffic from the direction of Dallas to Tulsa and northeastern Oklahoma.

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Labor

Hiring Hall Law Is Clarified

- **NLRB says members of association bargaining groups are liable only to own employees.**
- **But there's a big unanswered question: Is an exclusive hiring hall legal, however qualified?**

Penalties imposed on employers for hiring hall violations are subject to precise and definite limitations, the National Labor Relations Board has ruled.

In a new decision clarifying the application of the Mountain-Pacific and Brown-Olds rulings, the board announced these principles:

- **An employer accused of violating the law is liable for penalty with respect to his employees only,** in cases involving multi-employer labor contracts establishing a hiring procedure that does not conform to the Mountain-Pacific ruling. The theory is that an employer "participates in a contract only to the extent its own employees are involved."
- **The penalty includes reimbursement to all employees for any dues, fees, assessments, permit fees or other monies collected from them by the union as a condition of obtaining or retaining employment with the employer.** The liability begins six months prior to the filing and service of the original charge of a Mountain-Pacific violation and continues until the illegal hiring procedure is abandoned.
- **A closed shop or exclusive hiring hall arrangement established through bargaining is automatically illegal if it does not contain the three elements required by the Mountain-Pacific decision:** selection of job applicants on a nondiscriminatory basis, employer retention of the right to reject applicants referred by the union, and public posting of all provisions of the hiring arrangement. The mere existence of the unlawful contract is enough to make the reimbursement remedy apply. It is not necessary to prove that workers were forced to join the union or pay for work permit fees in order to get a job. Proof of "actual exaction of monies" from the employees is no longer necessary.

All of these principles relate to a simple right guaranteed to all workers by federal labor law: No one has to join a union or pay a union anything in order to get or hold a job.

The only limitation on this is that a worker in a state with no right-to-work law may have to join a union 30 days after he is hired if his employer is unionized and has consented to a union shop. (The Kennedy labor reform bill would change this rule.)

The decision allays the fears of some contractors who engage in multi-employer bargaining. They were afraid that all employers in the group would be liable if one member were caught for a Mountain-Pacific violation stemming from the bargaining.

It does not, however, answer this big question: Is the NLRB correct in assuming that an exclusive but nondiscriminatory hiring arrangement within the Mountain-Pacific pattern is legal? The answer to that question will have to come from the courts. That question has been raised by a California chapter of Associated General Contractors.

The case that led to the decision grew out of a closed shop arrangement between a Long Island local of the operating engineers' union, headed by John DeKoning, and members of the Nassau and Suffolk Contractors' Association.

The board concluded that the arrangement was a preferential hiring-hall under which membership in the local union, or referral by the union, or a permit from the union or approval by the union was a necessary condition of employment.

It also found that the union attempted to use its absolute control over the distribution of jobs to thwart clean-up efforts of union reformers. And it ruled that it is unlawful discrimination to operate a union welfare fund so that employees holding work permits do not receive the benefits granted to union members covered by the fund.

Further clarification of the law on hiring procedures took the form of these announcements:

- **The offending union is subject to the Brown-Olds reimbursement penalty and is jointly and severally liable with any employer who gets caught. The union's liability, however, is more extensive than the employer's.** It extends to all employees of all employers covered by the illegal contract, in multi-employer or association bargaining. If the union alone is named as the defendant, it is solely liable for the reimbursement.
- **An employer violates the law if, through union influence, he lays off or discharges workers who have become persona non grata** with the union because they are union reformers—even if their presence on the job causes other union members to strike.

These clarifications will remain the law only so long as the board is not reversed by the courts. They all hang on the assumption that an exclusive hiring hall can be made nondiscriminatory and therefore legal.

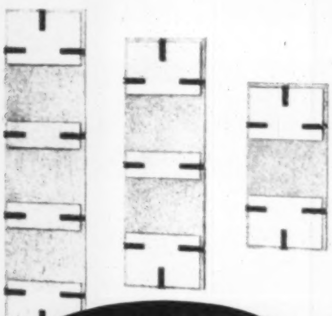
A court may decide that this is impossible because mere union operation of the hiring hall may be enough to encourage nonunion workers to join a union or make them think they can't get a job without joining the union.

The Mountain-Pacific Chapter of the AGC raised the question in its recent negotiations with two locals of the operating engineers. In the course of a three-week strike it contended that it could not be forced to negotiate on an exclusive hiring hall because it is illegal. Its contention was turned down by the NLRB regional director and that decision has been appealed to the board's general counsel.

Meanwhile, NLRB member Joseph Jenkins has said the basic Mountain-Pacific ruling is really a compromise between board members who believe that any exclusive hiring arrangement is illegal and those who believe the good features of the hiring hall system should be preserved.

Mr. Jenkins stressed the posting requirement and suggested that without it union referrals might be psychologically discriminatory.

"If the board is without authority, as some have suggested, to write criteria which will avoid the taint of illegality, then, I suppose, that I have been incorrect and all exclusive hiring halls are in such basic conflict with the statute as to be per se illegal," he said.



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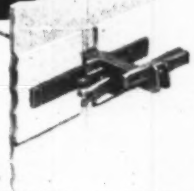

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SIMPLICITY — any crew with minimum experience will be able to make fast progress.

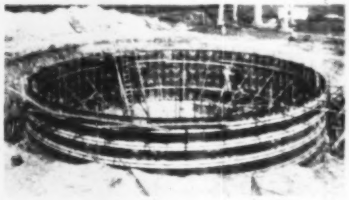
ONE WORKING PART — does 4 separate jobs.

ONLY ONE TOOL NEEDED — a hammer.

SUPERIOR All-Ply Panels are used in all types of construction—for forming ordinary residential foundations to intricate high walls.

The great strength and rigidity of All-Ply Panel Forms are provided by exterior grade 1⅛" plywood, backed at strategic areas with ½" plywood. Forms weigh less than 5 lbs. per sq. ft. and are easily handled by one man. A hammer is the *only* tool required for erection and stripping. The absence of frames permit easy stacking and transporting in minimum space. Long life and many re-uses are assured.

Write For New 8 Page Bulletin AP-59



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Helmsmen Selected

Joint Conference names its committee members

The Construction Industry Joint Conference—the new top-level troubleshooter on problems of joint concern to labor and management—has completed the organization of the Joint Administrative Committee, its functioning group.

The Joint Conference is composed of representatives of the AFL-CIO international building trades unions and participating national contractor associations (ENR Apr. 16, p. 27).

Here are the committee members:

Employer Members

Chairman: **J. D. Marshall**, Executive Director, Associated General Contractors.

Secretary: **Edward T. Kelley**, Labor Relations Manager, AGC.

William E. Dunn, Assistant Executive Director, AGC.

Paul H. Geary, Executive Vice President, National Electrical Contractors Association.

William F. Nelson, William F. Nelson, Inc., Washington, D. C. (member of the Mason Contractors Association).

Lloyd B. Gruman, Jr., Secretary, Mechanical Contractors Association of America, Inc.

Charles D. Haxby, Vice President, The Rust Engineering Co., Pittsburgh (member of the National Constructors Association).

Paul L. Wetcher, Labor Relations Manager, C. F. Braun & Co., Alhambra, Calif. (member of the National Constructors Association).

Edward S. Torrence, Assistant to the President, Painting and Decorating Contractors of America.

Labor Members

Chairman: **M. A. Hutcheson**, General President, United Brotherhood of Carpenters and Joiners.

Secretary: **Vincent F. Morreale**, General Counsel, International Hod Carriers, Building and Common Laborers Union.

Josepr J. Delaney, General President, International Union of Operating Engineers.

Peter Fosco, General President, International Hod Carriers, Building and Common Laborers Union.

Gordon M. Freeman, International President, International Brotherhood of Electrical Workers.

J. H. Lyons, General President, International Association of Bridge, Structural and Ornamental Iron Workers.

Harry C. Bates, President, Bricklayers, Masons and Plasterers' International Union.

Peter T. Schoemann, General President, United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry.

Lloyd A. Mashburn, General President, Wood, Wire and Metal Lathers' International Union.

(*Labor continued p. 86*)

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Adjusta-Brace

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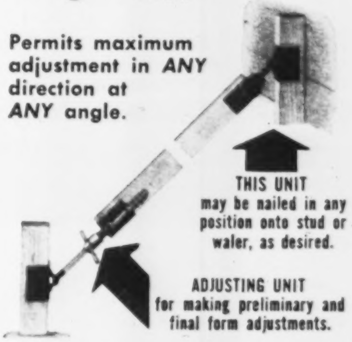
Permits maximum adjustment in *ANY* direction at *ANY* angle.



THIS UNIT may be nailed in any position onto stud or waler, as desired.

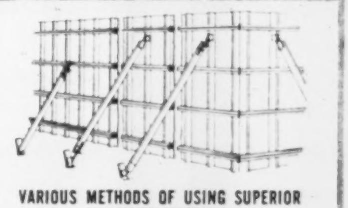
ADJUSTING UNIT for making preliminary and final form adjustments.

Providing a swivel action for quick positioning and adjustment, the Superior Adjusta-Brace consists of two units, connected by a 2 x 4, 2 x 6 or a 1" i.d. pipe. Either unit may be attached to the wall form, or to the stake, but it is usually more convenient to use the Adjusting Unit at the stake.

The Adjusting Unit has a patented double-wing nut, working on a 1" diameter rod, with an adjustment of 12". The design of this bracket and the method of attachment are such that it works as a universal joint to take any required position. The companion non-adjusting unit is also designed to take any position that field conditions may impose.

The Superior Adjusta-Brace is light in weight, durable, and inexpensive. Contractors report substantial savings in time and labor compared to the conventional method of bracing.

Write for prices & Bulletin AB-1.



VARIOUS METHODS OF USING SUPERIOR ADJUSTA-BRACE

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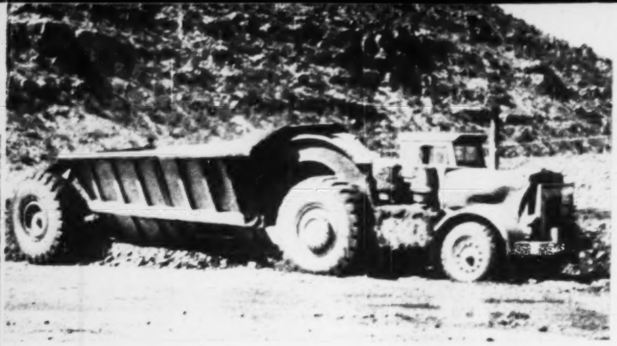
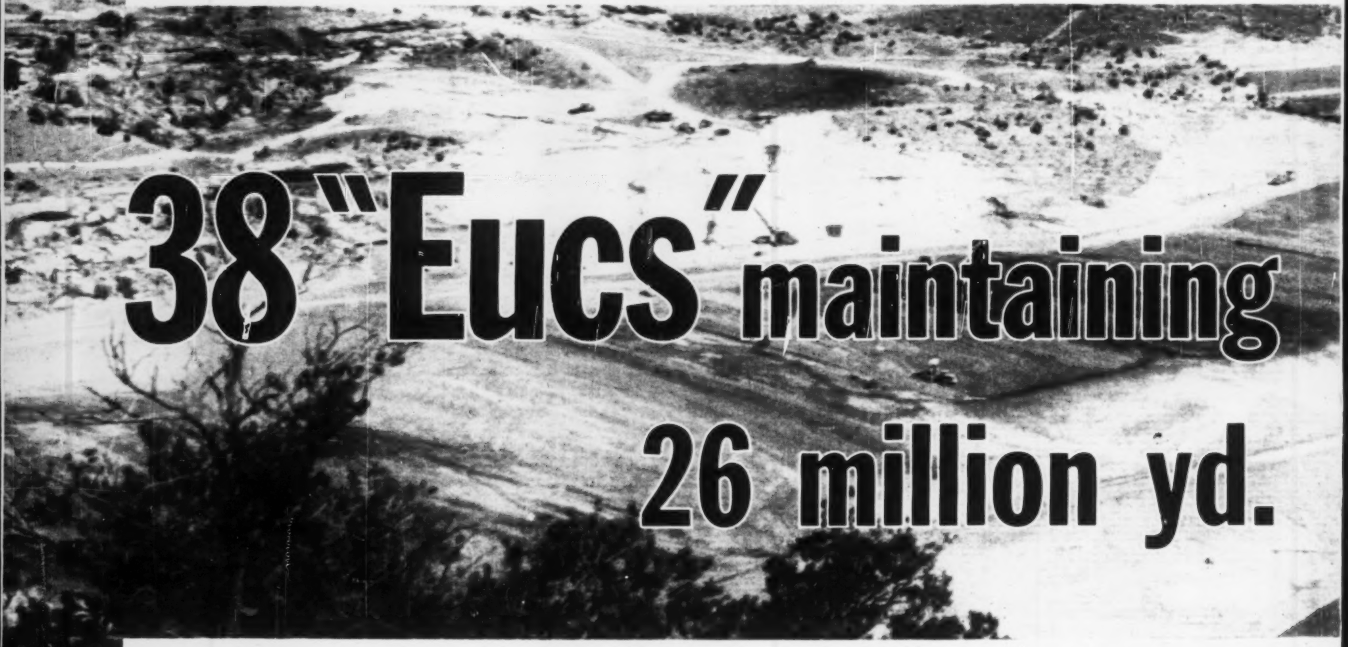


30 Yd. BOTTOM-DUMPS

Loaded by big draglines or overhead hopper, a fleet of ten Bottom-Dump "Eucs" haul pervious gravel from borrow areas up to 2 miles from the dam. They will move well over 12 million yds. on these long hauls with maximum grades of 8%.

22-Ton REAR-DUMPS

Fourteen "Euc" Rear-Dumps are being used to haul earth and rock from the channel, diversion tunnel and structure excavations. These versatile haulers have been "standard" equipment on practically every major dam built in the past 20 years.



38 "Eucs" maintaining 26 million yd.

NAVAJO DAM in northwestern New Mexico will be the second largest ever built for the U. S. Bureau of Reclamation and one of the highest earth-fill dams in America. It will take nearly 5 years to build and will require 26 million yds. of compacted fill for the embankment that will rise a maximum of 405 feet. The resulting storage reservoir 34 miles long will provide irrigation water for 115,000 arid acres on the Navajo Indian Reservation.

Morrison-Knudsen Company, Inc., sponsor of the joint venture with Henry J. Kaiser Co. and F & S Contracting Co., already has 38 "Eucs" at work on this big, tough job. This Euclid fleet includes 10 big "Twin" Scrapers, TC-12 Twin-Power Crawlers, 30 yd. Bottom-Dumps and Rear-Dumps of 22 ton payload capacity. M-K's choice of Euclid equipment to move this tremendous tonnage of compacted fill material was based on years of experience with the dependable, high productive capacity of "Eucs" on a wide range of jobs.

Whether you're using earthmoving equipment on big projects like Navajo or small grading work, there are Euclid models to fit the job.

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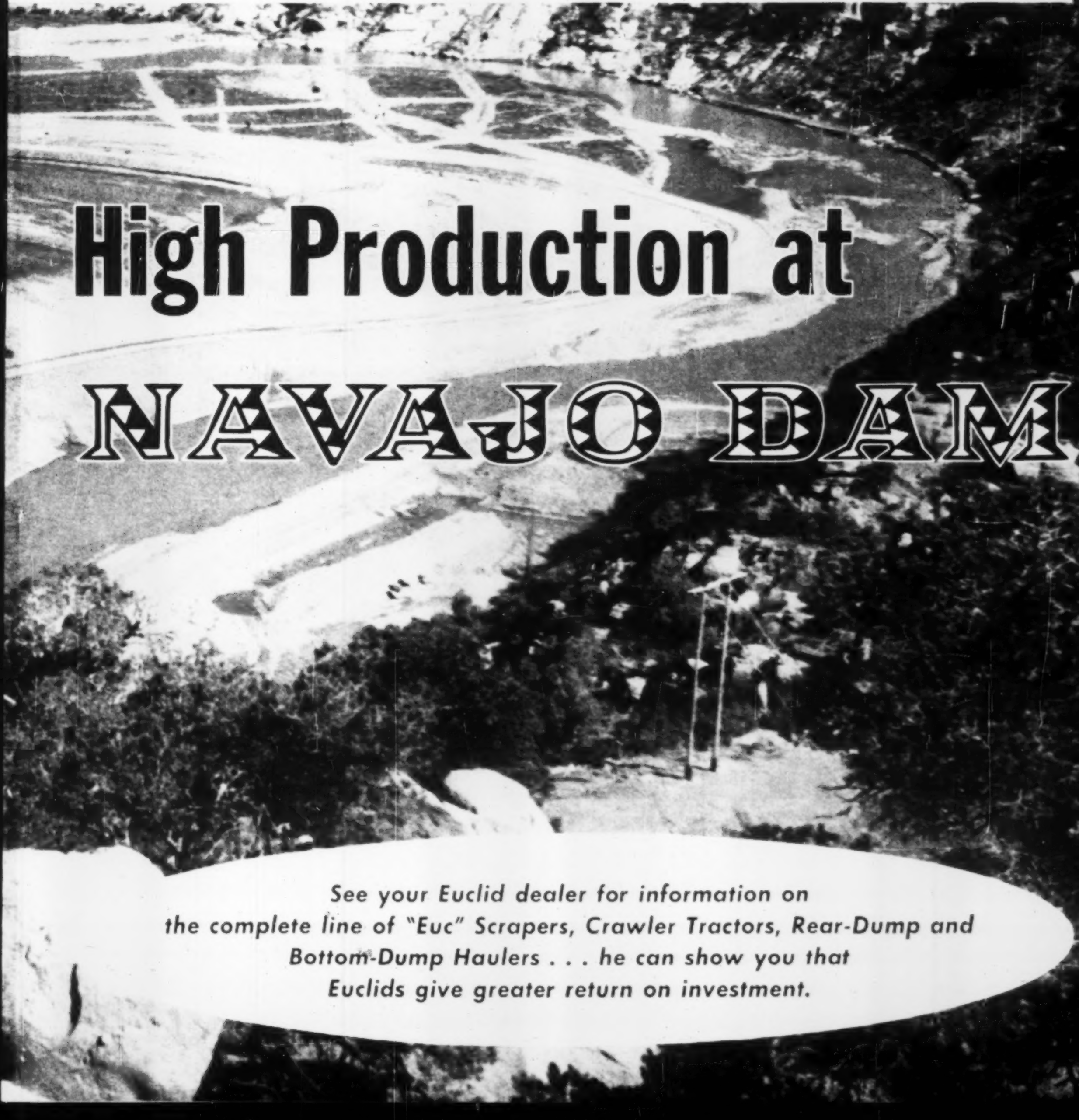
"TWIN" SCRAPERS and CRAWLERS

Ten of these big twin-power scrapers of nearly 600 total h.p. are moving 30 yd. loads of impervious core material to the fill. They are push loaded in the borrow pit by Euclid TC-12 Tractors of 425 net h.p. to get maximum loads in the shortest possible time. Four TC-12's were purchased to push load the "Twin" Scrapers. With two engines and independent track drive, these "Euc" tractors have exceptional maneuverability with power and speed that give them unequalled work-ability on all big tractor jobs.



High Production at

NAVAJO DAM

See your Euclid dealer for information on the complete line of "Euc" Scrapers, Crawler Tractors, Rear-Dump and Bottom-Dump Haulers . . . he can show you that Euclids give greater return on investment.

Cement Pact With Ideal May Set Industry Pattern

A possible breakthrough in collective bargaining negotiations in the cement industry came last week when the Cement, Lime and Gypsum Workers International Union tentatively agreed on a two-year labor contract with Ideal Cement Co.

The contract calls for a 10-cent wage increase each year and for higher Sunday rates, improvements in medical and vacation benefits and a company contribution to a supplemental unemployment benefit plan. It is subject to ratification by 1,900 union members in 16 plants.

A union spokesman expressed hope that other industry employers will accept the settlement as the industry pattern.

A company official said the contract will not affect 1959 prices but will probably mean higher prices next year.

Labor in Brief . . .

- **Pre-hire questioned**—A labor reform bill introduced by Rep. Ludwig Teller (D., N. Y.) omits the construction industry amendments sought by the AFL-CIO building trades unions. The Senate overwhelmingly approved the amendments when it passed the Kennedy bill on a 90 to 1 vote.

- **Political support?**—Labor, already disillusioned by some of its "friends" in Congress, was urged by Republican National Committee Chairman Thruston B. Morton not to put too many "eggs" in the Democratic "basket." On right-to-work, he said his "personal" view is that the issue should be left to colective bargaining not state laws.

- **Higher aluminum prices**—Kaiser Aluminum & Chemical Corp.'s general manager, D. A. Rhoades, has predicted higher aluminum prices later this year if wage talks that started last week with the Aluminum Workers International Union end in a wage increase. He said steel is better able to absorb wage boosts than aluminum

- **A new tactic**—Efforts of upstate New York contractors to centralize their bargaining last week produced an unusual strike development. Troy bricklayers picketed jobs of Troy contractors in Albany, which is in the jurisdiction of another local and where the bricklayers are not bargaining. The bricklayers union is also thwarting efforts to equalize the Troy-Albany-Schenectady rates.

OFFICIAL PROPOSALS

Bids: July 9, 1959

Boice Drain
Drainage District No. 2494

NOTICE OF LETTING OF
DRAIN CONTRACT AND
REVIEW OF APPORTIONMENTS

NOTICE IS HEREBY GIVEN, That I, HENRY V. HERRICK, County Drain Commissioner for the County of Wayne, State of Michigan, will now and until 11.00 A.M. E.S.T. on THURSDAY the 9th day of July A.D., 1959, receive sealed bids for the "Cleaning Out, Relocating, Widening, Deepening, Straightening and Tiling of a certain drain known and designated as BOICE DRAIN, Drainage District No. 2494, located and established in the Townships of Romulus and Nankin and the Village of Wayne, Wayne County, Michigan, in the office of the Wayne County Drain Commissioner, 3523 Cadillac Tower, Detroit 26, Michigan, at which time bids will be publicly opened and read by Mr. Henry V. Herrick, the Wayne County Drain Commissioner.

Said Drain consists of approximately 11,000 lineal feet of 12" to 108" diameter sewers in open cut and tunnel, together with junction chambers, manholes and appurtenances according to drawings and specifications prepared by Brender and Brender, Engineers of Wayne, Michigan.

In the construction of said drain, the following quantities and character of tile or pipe will be required:

1508 L.F. of 108 inch R.C. pipe Sewer ASTM C-76-2
4878 L.F. of 102 inch R.C. Pipe Sewer ASTM C-76-2
3238 L.F. of 84 inch R.C. Pipe Sewer ASTM C-76-1
1400 L.F. of 60 inch R.C. Pipe Sewer ASTM C-76-1
380 L.F. of 36 inch R.C. Pipe Sewer ASTM C-76-1
255 L.F. of 24 inch Concrete Pipe
30 L.F. of 12 inch R.C.P. Sewer ASTM C-76-2
35 L.F. of 12 inch Clay Pipe ASTMA C-200
3 each M.H. on 108" & 102" Pipe
6 each M.H. on 84" & 60" Pipe
7 each M.H. on 36" and under
2 each Transition Chamber
3 each Standard Catch Basins
1 each Headwall at River
1 each Inverted Syphon and Chambers
6 each Special Inlets

Said job will be let in accordance with plans now on file with the other papers pertaining to said Drain in the Office of the County Drain Commissioner for the County of Wayne, to which reference may be had by all parties interested, and bids will be made and received accordingly. Contract will be made with the lowest responsible bidder, for the entire job, who shall give adequate security for the performance of the work. I hereby reserve the right to reject any or all bids, waive any irregularities in bidding, and/or to adjourn such letting to such time and place as I shall publicly announce.

The Drain Commissioner shall have the right to hold all bids for a period of One Hundred and Fifty (150) days after the opening thereof. No bidder shall have the right to withdraw his bid during such time.

The Drain Commissioner shall, within the period of 150 days, herein provided for the holding of bids, obtain the approval of the Wayne County Board of Auditors to the awarding of the contract to the lowest responsible bidder, and shall notify such bidder of his award of the contract. The Drain Commissioner shall be given 150 days from the date of receipt of bids to sell bonds in an amount sufficient to pay for this project, it being understood that if the Drain Commissioner shall not have marketed bonds in an amount sufficient to pay for this project within such 150 day period no contract shall be executed. If within such 150 day period the Drain Commissioner shall successfully sell bonds in an amount to pay for the project, the Drain Commissioner shall forthwith notify the successful bidder of such sale and a contract with the successful bidder shall be executed within ten (10) days from the date of notice of the sale of bonds. The bid, of the successful bidder, and the bond securing the same, shall remain in full force and effect until the contract is executed. If the bonds hereinbefore required to be sold are not marketed within the period provided above, the bid shall be deemed to be null and void and the bid deposit shall be returned to the successful bidder.

The 150 day period provided above for the sale of bonds and the giving of notice thereof may be extended from time to time by mutual agreement between the successful bidder and the Drain Commissioner.

The successful bidder shall not be required to execute performance bond, material lien bond, or provide the insurance herein otherwise required until he shall first have been notified of the sale of the bonds by the Drain Commissioner, and upon receipt of such notice, the successful bidder shall be required to execute and deposit such bonds and insurance as are required by the terms of the contract at the time of the execution thereof.

Copies of the plans and specifications may be secured from the Office of the Drain Commissioner of the County of Wayne, Michigan at 3523 Cadillac Tower, Detroit 26, Michigan. A deposit of Twenty-five Dollars ($25.00), CHECK ONLY, will be required on each set of plans, which will be refunded upon their return in good order within thirty (30) calendar days after the opening of bids.

Any person desiring to bid on the above mentioned work will be required to deposit with the County Drain Commissioner a certified check or bank draft payable to the Wayne County Drain Commissioner, or a satisfactory bid bond executed by the bidder and a surety company in an amount equal to five percent (5%) of the bid, shall be submitted with each bid.

The payments for the above mentioned work will be made as follows: IN CASH, FROM THE RECEIPTS OF THE SALE OF BONDS. Contractor may draw up to 80% of work completed from time to time and upon the approval of the Engineer. Taxes will be spread in Thirty (30) installments. First installment, December, 1959. Dated this 10th day of June A.D., 1959.

HENRY V. HERRICK
County Drain Commissioner for the County of Wayne

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5211) will be received at Ogden, Utah, until 10 a.m., Mountain Standard Time, July 23, 1959, for furnishing labor and materials for earthwork, pipelines, and structures, Ricks Creek Laterals, Davis Aqueduct Lateral System, Weber Basin Project, Utah. Location north of Salt Lake City, Utah. Principal items are 4,900 cu. yds. excavation; 190 cu. yds. concrete in structures; 9,475 lin. ft. pipe for pipelines, 6- to 12-inch, optional kinds of pressure pipe; various steel pipe, fittings, gate valves, and miscellaneous metalwork; and other work. Completion time 200 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah, or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5214) will be received at St. Paul, Nebraska, until 10 a.m., Central Standard Time, July 30, 1959, for furnishing labor and materials for Sherman Dam, Farwell Unit, Nebraska, Missouri River Basin Project. Location near Loup City, Nebraska, in Sherman County. Principal items are excavation 2,180,000 cu. yds.; earth embankment, 1,650,000 cu. yds.; concrete 3,850 cu. yds.; and other work. Completion time 900 days. For particulars, address Bureau of Reclamation, P. O. Box 143, St. Paul, Nebraska, Building 46, Denver Federal Center, Denver 25, Colorado or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5213) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, July 23, 1959, for furnishing four (4) 100,000-pound capacity, double-drum hoists for the 40 x 52.5-foot spillway radial gates for Glen Canyon Dam, Glen Canyon Unit, Arizona-Utah, Colorado River Storage Project. Delivery is desired within 300 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Bids: June 30, 1959

Rochester Airport, Construction of Runway—Lighting

PROJECT: Rochester Airport, Monroe County, New York

Construction of 500' W. Ext. of E-W Runway—Contract No. 2—Lighting
F.A.A. Project 9-30-011-09

A 1. Sealed proposals, in duplicate, for the aforementioned work, will be received up to 11:00 A.M. Eastern Daylight Saving Time, June 30, 1959 in the office of the Monroe County Director of Public Works, Room 407, Terminal Building, 65 Broad Street, Rochester 14, New York where they will be publicly opened and read.

A 2. Copies of the Plans, Specifications and Proposal Forms may be obtained from the Monroe County Department of Public Works, Room 407, Terminal Building, 65 Broad Street, Rochester 14, New York upon payment of fifteen (15) dollars for each set requested. The full amount charged will be returned to all bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Half of the amount charged will be returned to non-bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Checks or money orders should be made payable to the order of Clarence A. Smith, Monroe County Director of Finance.

A 3. A certified check or bid bond payable to the order of Clarence A. Smith, Monroe County Director of Finance, and equal to not less than five (5) per cent of the bid must be enclosed in the same envelope with the proposal. All such certified checks or bid bonds will be returned to the unsuccessful bidders within 10 days after bids are opened. The certified check of the successful bidder will be returned upon signing of contract documents.

A 4. The preparation and submission of all proposals shall be in strict accordance with the requirements of "Section 20, Proposal Requirements and Conditions" of the C.A.A. "Standard Specifications for Construction of Airports" dated January 1948, including all revisions and supplements of the issues in effect on the date of invitation for proposals.

A 5. The right is reserved, as the interest of the Owner may require, to reject any or all bids, to waive any informality in bids received, to reject any items of any bid, to advertise for new proposals or to proceed to do the work otherwise, when the best interests of the Owner will be promoted thereby.

A 6. The right is reserved, as the interest of the Owner may require, to revise or amend the plans and/or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda issued to all respective bidders, and written acknowledgment of receipt of all addenda will be submitted with the sealed proposal as hereinafter specified in Section B: Instruction to Bidders.

COUNTY OF MONROE
By: C. A. Bennett
Purchasing Agent

Bids: July 14, 1959

For the Sale of Tunnel Gates and Appurtenant Metalwork Salvaged from Long Sault Dam Near Massena, St. Lawrence County, New York

POWER AUTHORITY OF THE STATE OF NEW YORK
RE-ADVERTISEMENT FOR PROPOSALS
SPECIFICATIONS NO. PA-5-1508
ST. LAWRENCE CONTRACT NO. 192

NOTICE TO CONTRACTORS. The Power Authority of the State of New York will receive sealed proposals from prospective purchasers of Tunnel Gates and Appurtenant Metalwork Salvaged From Long Sault Dam, near Massena, St. Lawrence County, New York until 10:30 A.M. Eastern Daylight Saving Time on the 14th Day of July, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The quantities of the principal items of equipment and material to be sold are as follows:

27 Fixed Wheel Gates, Designed for Closure of 16 x 19 Foot Tunnels under 80 Foot Head.
Approx. 150 Tons 1½" x 8" Gate Suspension Bars of Assorted Lengths, with Pins.
1 Gate Lifting Beam Assembly.
28 36" WF-160 Beams, Each Approximately 58 Feet Long.
Approx. 25 Tons Miscellaneous Fabricated Structural Steel.
Approx. 5,300 Sq. Ft. ¼" Thick Checkered Steel Plate.
Approx. 2,000 Lin. Ft. 1¼" Steel Pipe Hand Railing.

All equipment and material which is purchased shall be completely removed from the St. Lawrence Power Project on or before December 31, 1959.

Bids will be considered on any number of gates from one to twenty-seven and on any bid item or combination of bid items for appurtenant metalwork.

Plans, Specifications and Proposal Forms for the equipment and material to be sold may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at no cost, upon written application. Plans, Specifications and Proposal Forms for the equipment and material to be sold will be on file in the Authority's Office and in the Offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total amount of the bid.

The right is reserved to make award on any bid or combination of bids and to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: August 25, 1959

Republic of Iraq Development Board & Ministry of Development Lower Diyala Outfall Drains—Daudiya Pump Station, Supply of Mechanical and Electrical Equipment, and Civil Engineering Works

The Development Board and Ministry of Development, Baghdad, Iraq. Invite tenders for the construction of the Daudiya Pumping Station and for the Supply of the Mechanical and Electrical Equipment.

The Daudiya Pumping Station is situated on the River Tigris within thirty Kilometres of Baghdad. The work is divided into two contracts.

DMT D4 A Daudiya Pump Station Mechanical Plant and DMT D4 B Daudiya Pump Station Building and Civil Engineering works.

The Pump Station will consist of (4) sets each to deliver 2 cubic metres per second (cumecs). Full information regarding this tender and the documents may be inspected from Embassy of Republic of Iraq, 2135 Wyoming Avenue N.W., Washington, D.C.

Tender must be submitted in English to the Ministry of Development, Directorate General of Legal Affairs & Contracts, Baghdad, Iraq. On or before 25th August 1959.

A M 28-5

Bids: July 16, 1959

Construction of Sanitary Sewers and Administration and Maintenance Buildings

Sealed bids for the construction of Sanitary Sewers and Administration Building and Maintenance Building for the Gates-Chili-Ogden Sewer District will be received by the Monroe County Sewer Agency at its office at 406 Terminal Building, 65 Broad Street, Rochester 14, New York, until 11 A.M., E.D.T. on the 16th day of July, 1959.

Bidding forms can be obtained and plans and specifications examined at the office of the Monroe County Sewer Agency, or at the office of The Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York.

Copies of plans and specifications for SEWERS, Sections D-1, D-2, K-1 and K-2, may be obtained upon the payment of twenty-five dollars ($25.00) for each section.

Copies of plans and specifications for the Administration and Maintenance Buildings, Section FF, may be obtained upon the payment of fifteen dollars ($15.00).

The full amount charged will be returned to all bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Half of the amount charged will be returned to non-bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Checks or money orders should be made payable to the order of Clarence A. Smith, Monroe County Director of Finance.

The work consists of the construction of:

SECTION D-1. Approximately 12 miles of Sanitary Sewer, 8 inch to 24 inch diameter, with all appurtenances.
SECTION D-2. Approximately 13 miles of Sanitary Sewer, 8 inch to 18 inch diameter, with all appurtenances.
SECTION K-1. Approximately 15 miles of Sanitary Sewer, 8 inch to 24 inch diameter, with all appurtenances.
SECTION K-2. Approximately 10 miles of Sanitary Sewer, 8 inch to 15 inch diameter, with all appurtenances.
SECTION FF. Administration and Maintenance Buildings at site of Sewage Treatment Plant, including General, Plumbing, Heating and Electrical.

Each section may be bid separately.

COUNTY OF MONROE
By: C. A. Bennett,
Purchasing Agent

Bids: July 14, 1959

Construction of Railroad Embankment and Miscellaneous Structures

Sealed proposals will be received at the office of Wm. J. Hedley, Chief Engineer, Wabash Railroad Company, Railway Exchange Building, St. Louis 1, Missouri, until 12 noon (C.S.T.) on the 14th day of July, 1959, for constructing approach fills and miscellaneous structures adjacent to a double track railroad bridge now being constructed over the Calumet Sag Channel near Palos Park, Illinois. Plans, specifications and other information concerning this project can be obtained from the office of the Chief Engineer, Wabash Railroad Company, Railway Exchange Building, St. Louis 1, Missouri, upon payment of $10 per set.

Bids: July 21, 1959

Contract NYA-120.007

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
FOUNDATIONS AND PIPING FOR TEN FUEL TANKS

Sealed proposals for the construction of foundations and piping for ten fuel tanks at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, July 21, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $20.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $20.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 25, 1959

READ THE OFFICIAL
PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: July 16, 1959

New York State Road Work

NOTICE TO CONTRACTORS STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock a.m., advanced standard time, which is nine-thirty o'clock a.m., eastern standard time, on the 16th day of July, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Essex, Rensselaer & Washington (Rte. 9, 22, 73, 67, 7 & 22A)	R.C. 59-85	No. Hudson-Euba Mills, S.H. 5181, Br. #1; Essex-Willsboro, S.H. 1641, Br. #1; Keene Valley-Holts Cors., S.H. 8478, Br. #3; Valley Falls Village Conn., S.H. 8520, Br. #1; Raymertown-Hoosick Pt. 2, S.H. 5354, Br. #3, & Middle Granville-Hampton, S.H. 1937, Br. #1,	....	Cleaning and Painting 6 Bridges	$1,100 Plans $5	$19,000
Greene (Rte. 23)	B.A. 59-1	West Approach; Rip Van Winkle Br.	0.35	Asphalt Concrete Pavt.	$2,100 Plans $5	39,000
Rensselaer	FASS 59-14	West Sand Lake-Poestenkill-Cropseyville Pt. 3 Co. Rd. Proj. S-486(3)	2.08	Asphalt Concrete Pavt. Prestress. Conc. Bridge 1 Span 54'	$25,000	418,000
Schenectady (Rte. 7)	R.C. 59-73	Central Bridge-Quaker Street Pt. 2, S.H. 1029; Quaker Street Pt. 2, S.H. 105; Duanesburg-Quaker Street, S.H. 5551	7.84	Asphalt Concrete Pavt.	$14,000 Plans $5	258,000
Warren (Rte. 9N)	R.C. 59-97	Lake George Village, S.H. 843 Lake George-Bolton Landing, S.H. 418	6.67	Asphalt Concrete Pavt.	$12,000 Plans $5	215,000
Washington (Rte. 4)	FARC 59-66	Hudson Falls Village, S.H. 1080 Sandy Hill-Fort Ann, S.H. 803 Proj. F 413(6)	8.83	Asphalt Concrete Pavt.	$32,000 Plans $5	570,000
Washington (Rte. 149)	R.C. 59-98	Hartford-Granville, S.H. 1783	6.25	Asphalt Concrete Pavt.	$10,000 Plans $5	182,000
DISTRICT No. 3, Earle E. Towlson, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cayuga (Rte. 38A)	FARC 59-53	Auburn-Owasco, S.H. 614 Proj. F-642(3)	6.03	Asph. Conc. Pavt. = 6.01 Mi. Misc. Work = 0.02 Mi. Extend Exist. Conc. Slab Br. 1 Sp. 22', Prestress. Conc. Beam Br. 1 Span 62'	$63,000 Plans $5	1,148,000
Oswego	M 59-6	Oswego Grain Elevator	....	Asph. & Cem. Conc. Pavt. on Pier Area	$1,000 Plans $10	18,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 5)	FARC 59-93	East Pembroke-Batavia, S.H. 586; East Pembroke-Pembroke Pt. 1, S.H. 5020; East Pembroke-Pembroke Pt. 2, S.H. 5090 Proj. F 933(4)	9.04	Asph. Conc. Pavt. = 9.02 Mi. Misc. Work = 0.02 Mi.	$28,000 Plans $5	496,000
Genesee & Orleans (Rte. 5 & 18)	R.C. 59-88	Oak Orchard Pt. 3, S.H. 394, Br. #3; East Pembroke-Batavia, S.H. 586, Br. #2	....	Cleaning & Painting 2 Bridges	$800 Plans $5	15,000
Livingston & Wyoming (Rte. 20A & 39)	R.C. 59-94	Perry-Pine Tavern Cors. Pt. 1B and Pt. 2, S.H. 8433 Perry Center-Moscow Pt. 2, S.H. 1248	5.75	Asph. Conc. Ty. 1A Pavt.	$15,000 Plans $5	271,000
Monroe (Rte. 65)	FARC 59-82	Clover Street, S.H. 294 Honeoye Falls-Pittsford Town Line, S.H. 502 Proj. S-462(2)	8.82	Asph. Conc. Ty. 1A Pavt. = 8.79 Mi. Misc. Work = 0.03 Mi.	$25,000 Plans $5	458,000
Monroe (Int. Tour. Rte. 490)	FIC 59-6 FAC 59-9	Interstate Rte. Conn. 580, Rochester City; Eastern Expressway Pt. 1; East City Line Interchange & City of Rochester; Outer Loop Art. Highway (Highland Ave. to Int. Rte. 580) Proj. I-1107(11) & U-1093(4)	0.94	9" Cem. Conc. Pavt. 2 @ 50' Var. Wide = 0.94 Mi. (Asp. Conc. Ty. 1A & Ty. 2A on Interchange) 4 Hy. Seps. Comp. I-Beams 4 Sp. 321.5', 3 Sp. 143.5'; 4 Sp. 182' and 1 Sp. 62'; 1 Hy. Sep. Comp. Deck Girder 2 Sp. 234.4'; 2 RR Seps. Comp. I-Beams 5 Sp. 381.6' and 3 Sp. 135'; 2 RR Seps. Thru Plate Girders 4 Sp. 352.7' and 1 Sp. 57'	$275,000 Plans $10	4,964,000
Monroe	FAC 59-8 FASH 59-14	Rochester City Outer Loop: East Ave.-Winton Rd. N., Pt. 2, Rochester Outer Loop: East Ave.-Winton Rd. N., Pt. 2 (Blossom Rd. to Winton Rd. N.) Proj. U-1097(5)	1.88 (2.12 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 1.88 Mi. Asph. Conc. Pavt. Ty. 2A = 2.12 Mi. 4 Hy. Seps. Comp. W-F Beams, 3 Sp. 167.5', 3 Sp. 150.5', 4 Sp. 193.4' & 4 Sp. 239.9' Reinf. Conc. Arch Br. 1 Sp. 26.7'	$179,000 Plans $10	3,256,000
Monroe (Rte. 253)	FARC 59-101	Henrietta Station-South Arab Street, S.H. 1639 Proj. S-562(1)	3.04	Asph. Conc. Typ. 1A Pavt.	$12,000 Plans $5	222,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Chautauqua (Rte. 17J)	FARC 59-96	Chautauqua-Mayville, S.H. 1617 Proj. S-557(1)	0.89	Asph. Conc. Pavt. = 0.84 Mi. Misc. Work = 0.05 Mi.	$15,000 Plans $5	263,000
Erie (Rte. 33)	FARC 59-92	Genesee Street Pt. 3, S.H. 1214 Proj. F-377(18)	0.19	Asph. Conc. Pavt. = 0.17 Mi. Misc. Work = 0.02 Mi.	$4,000 Plans $5	67,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Int. Tour. Rte. 81)	FITS 59-10	Interstate Rte. 505 Sect. 7C-1, F.I. S.H. 57-2; Interstate Rte. 505, Sect. 7AB-3, F.I. S.H. 57-21; Adams-Henderson Pt. 1, S.H. 183; Adams Village Railroad St., S.H. 181 Proj. I-81-3(12)140	6.58 (0.54 Acc.)	Traffic Signs & Delineators	$1,500 Plans $5	26,000
Jefferson (Rte. 11 & 37)	FATS 59-9	Watertown-Theresa Pt. 1, S.H. 565; Watertown-Philadelphia Pt. 1, S.H. 5651 Proj. U-F-572(6)	1.03	Traffic Signs	$1,400 Plans $5	25,000
DISTRICT No. 8, Kurt F. Rauch, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange	FASS RC 59-19	Slate Hill-Middletown Co. Rd. 49 Project S-822(2)	4.44	Bit. Double Surf. Treat. Graded Gravel	$19,000 Plans $5	331,000
Ulster (Rte. 208)	FARC 59-83	Wallkill-Ireland Corners, S.H. 8262; Ireland Corners-New Paltz, S.H. 9203 Proj. F-416(5), F-613(12)	5.38	Asph. Conc. Pavt. = 5.35 Mi. Misc. Work = 0.03 Mi.	$50,000 Plans $5	920,000
Westchester (Rte. 9)	FAC 59-7	City of Peekskill: U. S. Route 9 Arterial Highway Proj. F-394(16)	1.72	Asph. Conc. Pavt. Rehabilitation Rig. Frame Steel Viaduct 6 Sp. 502'; Rehabilitation Rig. Frame Encased I-Beam, 1 Sp. 47.9'; Rehabilitation I-Beam 2 Sp. 82.8'	$15,000 Plans $5	276,000
DISTRICT No. 9, Joseph C. Federick, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 17)	R.C. 59-86	Deposit-Hales Eddy, S.H. 5045	3.05	Asphalt Conc. Pavt. Repairs to Exist. Bridge 226.5' Span.	$8,000 Plans $5	148,000
Otsego (Rte. 205)	R.C. 59-95	West Oneonta-Hartwick, Pt. 2, S.H. 8387	2.30	Asph. Conc. Pavt. Repairs to Exist. Bridge 26' Span	$8,000 Plans $5	136,000
Otsego (Rte. 28)	R.C. 59-99	Schuyler Lake-Cooperstown Pt. 2, S.H. 8333	2.04	Asph. Conc. Pavt.	$9,000 Plans $5	152,000
DISTRICT No. 10, M. E. Gour, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	B.P. 59-73	Atlantic Beach, Town of Hempstead	1.80	Beach Protection (Artificial Beach Nourishment)	$15,000 Plans $10	288,000
Suffolk (Rte. 25A)	FARC 59-87	Smithtown-Port Jefferson, S.H. 5232A Proj. S-430(4)	0.35	Asph. Conc. Pavt. = 0.09 Mi. Drainage & Misc. Work = 0.26 Mi.	$10,000 Plans $5	177,00

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisons of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the offices of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

U. S. Government

General Services Administration, Public Buildings Service, Washington, D. C., June 23, 1959—Sealed bids for construction (except elevator plant and escalator plant) of Office Building, National Institutes of Health, Bethesda, Maryland, will be received until 2:00 PM, EDT, July 30, 1959, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., S. W., Washington 25, D. C., and then publicly opened in Rm. 7122 at the above address. Upon request, Public Buildings Service, Rm. 1308, GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397, will furnish three sets of bidding material to General Contractors interested in bidding the complete projects. Three additional sets may be obtained by depositing $100.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $100.00. Deposits will be refunded for such sets if returned in good condition within thirty days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

OFFICIAL PROPOSAL

RATE $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Class. Adv. Div.; Engineering News-Record, P. O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: June 30, 1959

Rochester Airport, Construction of Runway—Grading, Drainage, Paving and Seeding

PROJECT: Rochester Airport, Monroe County, New York
Construction of 500' W. Ext. of E-W Runway—Contract No. 1
General Construction—Grading, Drainage, Paving and Seeding
F.A.A. Project 9-30-011-09

A 1. Sealed proposals, in duplicate, for the aforementioned work, will be received up to 11:00 A.M. Eastern Daylight Saving Time, June 30, 1959 in the office of the Monroe County Director of Public Works; Room 407, Terminal Building, 65 Broad Street, Rochester 14, New York, where they will be publicly opened and read.

A 2. Copies of the Plans, Specifications and Proposal Forms may be obtained from the Monroe County Department of Public Works, Room 407, Terminal Building, 65 Broad Street, Rochester 14, New York upon payment of twenty (20) dollars for each set requested. The full amount charged will be returned to all bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Half of the amount charged will be returned to non-bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Checks or money orders should be made payable to the order of Clarence A. Smith, Monroe County Director of Finance.

A 3. A certified check or bid bond payable to the order of Clarence A. Smith, Monroe County Director of Finance, and equal to not less than five (5) per cent of the bid must be enclosed in the same envelope with the proposal. All such certified checks or bid bonds will be returned to the unsuccessful bidders within 10 days after bids are opened. The certified check of the successful bidder will be returned upon signing of contract documents.

A 4. The preparation and submission of all proposals shall be in strict accordance with the requirements of "Section 20, Proposal Requirements and Conditions" of the C.A.A. "Standard Specifications for Construction of Airports" dated January 1948, including all revisions and supplements of the issues in effect on the date of invitation for proposals.

A 5. The right is reserved, as the interest of the Owner may require, to reject any or all bids, to waive any informality in bids received, to reject any items of any bid, to advertise for new proposals or to proceed to do the work otherwise, when the best interests of the Owner will be promoted thereby.

A 6. The right is reserved, as the interest of the Owner may require, to revise or amend the plans and or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda issued to all respective bidders, and written acknowledgment of receipt of all addenda will be submitted with the sealed proposal as hereinafter specified in Section B, Instruction to Bidders.

COUNTY OF MONROE
By: C. A. Bennett
Purchasing Agent

Bids: July 21, 1959.

Contract BP-160.015

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIER 10
ALTERATIONS FOR GARAGE

Sealed proposals for alterations to an existing building to convert it to a garage for Pier 10 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, July 21, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 25, 1959

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• POSITIONS VACANT

Civil Engineer with broad highway background. Should know control of soil work, design and control of concrete and asphaltic mixes, and actual field construction. Personality to function as staff consultant needed. Minimum age—38 years. Salary $10,000 to $12,500. Only complete application will be reviewed. Reply P-1851, Engineering News-Record.

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and/or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Experienced Architectural Draftsmen. Excellent opportunity with established consulting firm in Middle West. State education, experience and required salary. Reply to P-1545, Engineering News-Record.

Wanted—Graduate Civil Engineer—3 to 5 years field experience layout roads and bridges—interested in permanent position—can progress to Ass't Sup't. or Sup't. of Construction—Principal working area New York and Pennsylvania. Submit full resume, experience, salary, education. P-1794, Engineering News-Record.

Construction Superintendent experienced in all phases of large & heavy building projects. Submit detailed resume of experience and salary desired. P-1927, Engineering News-Record.

Wanted: Civil Engineer. Experienced, field, permanent position, growing construction company, near Poughkeepsie, New York. P-1896, Engineering News-Record.

Wanted: Estimator and Field Engineer, experienced, permanent position, growing construction company, near Poughkeepsie, N. Y. P-1921, Engineering News-Record.

Senior Estimator—primarily highway, five years or more experience covering takeoff, field exploration, pricing and handling subcontracts. Salary commensurate with ability. Location Midwest. Send resume and picture. P-1890, Engineering News-Record.

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Ambitious, aggressive, dependable, use no intoxicants, willing to start in the field of industrial buildings and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Top wages. Martin K. Eby Construction Co., Inc., P.O. Box 1679, Wichita, Kansas.

(Continued on the following page)

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P-1950, Engineering News-Record
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• *POSITIONS VACANT*

(Continued from preceding page)

Wanted—2 or 3 experienced detailing engineers for reinforcing bars, steel joist & similar products to be located in North Carolina. Old established firm with good working conditions, fringe benefits, trust funds, etc. State age, single or married, education, experience, salary desired, etc. P-1929, Engineering News-Record.

Civil engineers and civil draftsmen with 2 to 3 years office experience for responsible permanent position with progressive consultants in San Diego rural area. Salary range $500 to $800. Send full resume and availability to P-1968, Engineering News-Record.

Project Manager, highway and railroad, with experience in supervision of jobs in the one to four million dollar size, including excavation, paving, bridges, utilities. Work in Ohio-Indiana area. Submit resume of qualifications and salary required. P-1977, Engineering News-Record.

Engineer-Estimator to work out of Omaha, Nebraska on heavy construction and highway estimates. Submit resume of qualification and salary expected. P-1973, Engineering News-Record.

Field Office Engineer under 30 for Heavy Construction Project in East. Assist. Supt., layout work and make Quantity Computations. Permanent position. Excellent chance for advancement to Superintendent or Project Manager. P-1936, Engineering News-Record.

Paper Mill is looking for a graduate engineer, under 35 years of age with a B.S. degree in Electrical Engineering and a minimum of 5 years experience in Plant Electrical Engineering. This man should have experience in medium voltage generation and distribution and low voltage distribution. He must have a good working knowledge of medium and low voltage motor control. Some experience in industrial lighting is also desirable. This engineer is to have complete charge of all plant electrical maintenance in a plant that generates 20,000 KW of its own power and distributes it to departmental processes ranging from wood processing to three paper machines. He will be responsible in this position to the Plant Maintenance Superintendent. Please send resume including education, experience, and salary requirements. Write Personnel Manager, American Box Board Co., Filer City, Mich.

Portland, Maine, wants Deputy Building Inspector. Qualified civil engineer or architect with structural design, construction, or inspection experience. Promotional opportunity. Good pay, fringe benefits, tops in livability. Apply City Manager, City Hall.

• *POSITIONS WANTED*

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Civil Engineer, 34, 10 Years experience in all phases bituminous-concrete work in highway and airport construction including estimating and bidding. Desire relocation in northeast. PW-1901, Engineering News-Record.

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To sell general construction services in southeastern New England for leading contractor. Must be graduate engineer or architect with successful experience in selling construction on a negotiated contract basis. Salary and commission open. All replies confidential. Send resume and references to:

P-1901, Engineering News-Record
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Field Supt. Heavy Excavation, 25 years experience, all types of work. PW-1796, Engineering News-Record.

Project Manager or superintendent. Electrical construction experience in generating stations, industrial plants, sub-stations, transmission lines and distribution systems. Will relocate. PW-1903, Engineering News-Record.

Reliable man 35 years in construction. Experienced in rock blasting and sewer excavation and tunneling. Would like position in supervisory capacity. Salary $18,000. Write A.B. Izzo, 827 Morris Park Avenue, Bronx, New York.

Sales Engrg. or Management Opportunity Wanted by P.E., BSCE, Age 31. Experience 3 yrs. hvy. industrial constr. field engr., 3 yrs. responsible structural design. PW-1926, Engineering News-Record.

Contractor's Engineer, 52, BSince, P.E. N.J. Heavy Const: bridge piers, found., deep excav., form work, cost, take-off qtys., assist with bid. PW-1928, Engineering News-Record.

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Construction Engineer Manager—Total 32 years experience all phases. Many years foreign. Interested only in administrative position at top level. Prefer to locate in Spanish speaking countries or Southwest United States. PW-1855, Engineering News-Record.

Construction Executive and General Superintendent, 25 years experience in commercial, industrial, public buildings, and mass housing, experience includes all phases of construction, job management, purchasing, subcontracting, processing of claims, etc. Desire permanent relocation eastern U. S. PW-1006, Engineering News-Record.

Civil Engineer-Attorney. Age 39. Background with top law firm in private and government contracts; also, with large general contracting firm as legal counsel. Civil Engineering degree and experience. Desires position in legal or executive capacity. PW-1942, Engineering News-Record.

Civil Engineer—BSCE '58—age 28—experience in building construction and estimating. Desires work in design or building construction. Will relocate. PW-1979, Engineering News-Record.

Executive, thoroughly experienced buildings and Heavy Construction, open for connection requiring top man to assume full responsibility. Minimum $15,000. C. O. Sutherland, 17 Rich Avenue, Mount Vernon, N. Y. Tel. MO 4-7927.

(Continued on opposite page)

• POSITIONS WANTED

(Continued from opposite page)

Manager for Construction Program—Age 47—M.S. in Civil Engineering. Twenty-three years experience as corporate engineer and owner's representative for capital construction programs in aluminum and chemical industries. Experienced in profitability analysis, cost estimation, appropriation procedures, project planning, cost control and field supervision. Looking for an expanding corporation where my experience can be used in speeding economical construction. PW-1937, Engineering News-Record.

Concrete Reinforcing Steel Detailer. 5 yrs. experience, 32 years old, wish to re-locate. Also experience in Steel Joists & Allied Products. PW-1984, Engineering News-Record.

Attorney, experienced gov't construction & supply contracts, presently with U. S. Eng., seeks position with contractor. PW-1925, Engineering News-Record.

Millwright Supt.-20 yrs. experience, go anywhere, best references from national contractors. Resume on request. PW-1947, Engineering News-Record.

Construction Executive-presently in executive capacity, Licensed Professional Engineer, knowledge of government and private contracts, 22 years experience in all phases of construction, jobs management, cost controls, purchasing, subcontracting, processing of government claims, desires connection with growing contractor. PW-1945, Engineering News-Record.

Sanitary Engineer, P.E., M.S. in San. Eng., Assoc. Mem. ASCE, ten years eng. exp. Have designed and directed the engineering of several large sewage treatment projects; inc. a modern 24 mgd act. sludge plant recently constr., incorp. sludge drying and incin. (6.5 million). Connection sought with estab. consulting eng. firm. Min. salary $15,000. PW-1980, Engineering News-Record.

Civil Engineer-Recent Law Degree. Prof. Eng. MASS. Seven years experience; supervision and estimating foundation contracts, sales and administration in general construction. Desires position in construction, legal or related field. PW-1982, Engineering News-Record.

Civil Engineer. 31. BSCE. Married. 5 yrs. office experience, FAA Commercial & Instrument rating; prefer west or southwest, available Sept. PW-1969, Engineering News-Record.

Grad. BCE. Age 29. Single Municiple. Construction Engr. 3 years. Excellent Spanish, foreign position desired. Resume on request. PW-1986, Engineering News-Record.

Civil Constr. Engr.—BSCE; seeks planning & field opportunity with consultant and or general contractor; 2 yrs. hvy. constr., asst. job engr.; 8 yrs. U. S. Gov't., civil & constr. engr for o'seas constr. mil. posts & bases in Austria, Turkey & France (incl. 4 yrs. as Resident Engineer). Reply P. O. Box 578, Yonkers, N. Y.

Supervising Engineer, Civil-Sanitary, 22 yrs. experience all phases; fluent Spanish; desire job in Venezuela, prefer Caracas. PW-1933, Engineering News-Record.

Materials and Soils Engineer—BSCE—Over 10 years experience in construction of highways, toll roads and dams with both consultants and public agencies. PW-1985, Engineering News-Record.

Young Civil Engineer-2 years general field experience. Desires heavy construction field work. Preferably overseas. PW-1938, Engineering News-Record.

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Teaching or advisory. PhD struct. eng. 10 years research and teaching experience. Past 6 years successful industrial design and consulting. Age 42. Present income $12-$15,000. Resume available. PW-1970, Engineering News-Record.

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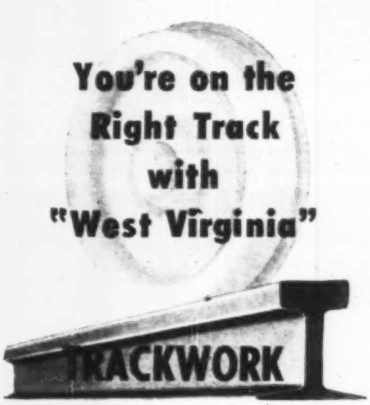
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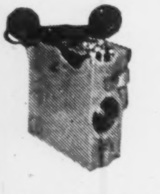

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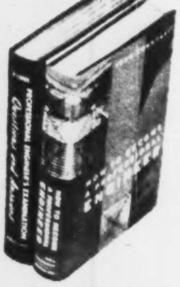

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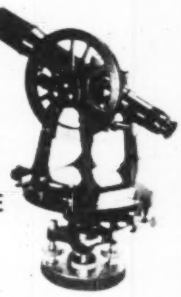

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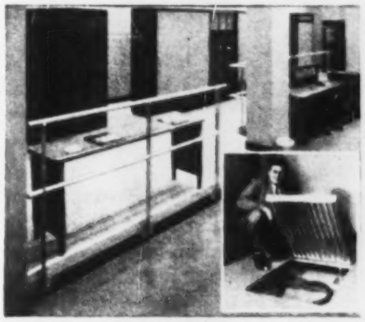

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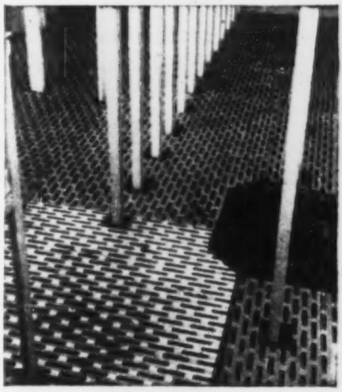

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Editorials

The Future Could Be Now

THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS celebrated its 25th birthday last week, and like most 25-year-olds, set some fine goals for the future. It would be gratifying to record that it had also decided that affiliation with Engineers Joint Council would speed up attainment of these goals. But, in fact, a contrary decision was reaffirmed.

In a fine presidential address on the state of the Society, Clark A. Dunn looked ahead, rather than back at the past quarter century. He declared that NSPE's overriding purpose for the future ought to be "guiding the people of our nation to fuller realization of their aspirations through increased utilization of engineering." This is a noble thought, which should be embraced by all engineers, and President Dunn drove it home well with his repeated emphasis on the need for NSPE to make a "maximum contribution to society." His whole thoughtful talk put emphasis on public service, and stressed that acceptance of an obligation to the public identifies the professional engineer.

Later in the silver anniversary meeting (see p. 23), D. B. Steinman, founder and first president of NSPE (cover story), called the Society a vision fulfilled. Describing its beginnings, he recalled envisioning "a national professional society . . . to unite engineers of all branches and specialties into one integrated organization for the advancement of the profession as a whole."

Certainly, Mr. Steinman can and should put the 25-year-old NSPE among his many dreams come true. His creed that "every man is a debtor to his profession" has gotten through to 50,000 who have joined NSPE to foster advancement of their profession. And the effectiveness of NSPE as a spokesman for its members has been demonstrated, both in Washington and in state and local forums.

But what of the future of which President Dunn speaks? Can the Steinman concept of every man's obligation to his profession be extended within NSPE to the broader and better concept of every professional man being a debtor to society? Clark Dunn sees a bigger organization as the key to this. To make the "maximum contribution to society," he says, "we must be sizable." He maintains that service to members through strong leadership will insure NSPE's continued healthy growth among the registered engineers of the nation (who now number about 220,000).

In this declared dependence on internal growth for the increased opportunity for public service and in an action of its board, which once more declined the standing invitation to join 20 other U.S. engineering societies in Engineers Joint Council, NSPE says, in effect, that while dedicated to a "maximum contribution to society" it is content to wait until growth in numbers will permit its single-handed fulfillment of this vision. The point that the NSPE leadership seems to miss is that this growth in numbers would come ever so much faster if the Society were under the EJC umbrella. And the goal of a "maximum contribution to society" would be more quickly attained.

A truly significant silver anniversary benchmark could have been set if the NSPE had declared in favor of the fullest cooperation with other engineering societies. By joining EJC, which exists primarily to coordinate public service activities by individuals within its member societies, NSPE's goal for the next 25 years could be accomplished tomorrow. The future could be now.

Domes, Pleats and Umbrellas

THE U.S. EXHIBITION IN MOSCOW, which will open next month, is designed to further Soviet understanding of life in this country. And despite the fact that the layout of buildings and gardens resembles a Hollywood movie set more than Main Street or a village square (see p. 24), it stands a better than even chance of accomplishing its objective.

Mostly, of course, it is the exhibits of products, and of pictures and models of what we have and how we live that will tell the real story. But in Moscow the telling will be powerfully aided by the exhibit structures themselves, whose roofs, in the form of domes, pleats and umbrellas, will demand attention and excite curiosity. Since such ultramodern designs do have their counterparts in the U.S., they will exemplify to the Soviets one of our important characteristics—the urge to improve continually on what we have.

Additionally, selection of these particular structures for the exhibition pinpoints our penchant for economy and speed in construction. Faced with the basic requirements that the buildings should be attractive and large enough for their purpose, we then designed them for light weight, to save on shipping charges, and for speedy erection, to cut down labor costs.

The 200-ft dia dome, in particular, has already caught the Russians' fancy. Premier Khrushchev, himself, drew attention to the structure by visiting it while it was under construction. It is a type that has been built in several places in the U.S. because it provides a large floor area unobstructed by columns at a relatively low cost. It was assembled in Moscow in two weeks.

Representative of a continuing trend in the U.S. toward use of double-curved thin shells for spanning long distances, the dome demonstrates that the American construction industry is not static either in its architecture or its construction techniques. The use of pleated roofs and hyperbolic-paraboloid umbrellas on other structures will add to this impression because they are so different from the dome.

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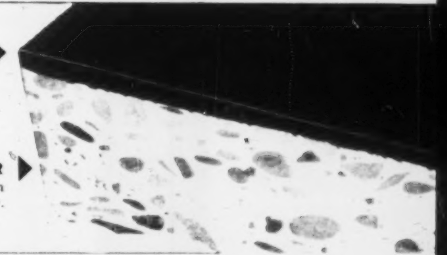

MASTERPLATE provides a thick . . . tough . . . malleable "iron-clad" floor surface.

CONCRETE BASE SLAB FOR MASTERPLATE surface can be monolithic or two-course.

FOR FINISHING NEW CONCRETE FLOORS or re-surfacing old concrete floors—MASTERPLATE withstands impact . . . is oil resistant and virtually non-absorbent . . . easy to clean . . . resistant to many industrial corrosives and strong cleansers . . . *and outwears the best plain concrete floor 4 to 8 times according to tests by top independent testing authorities.*

2-MINUTE TIME EXPOSURE—using "tracer lights"—shows typical continuous, heavy floor traffic pattern over MASTERPLATE floor at Lincoln Electric Co., Cleveland, Ohio—world's largest manufacturer of arc welding equipment.

MASTER BUILDERS®
MASTERPLATE*

*MASTERPLATE *is a registered trademark of The Master Builders Co. for its specially prepared, metallic aggregate for producing "iron-clad" concrete floors.*

Asphalt can "take it"

HENNIS
FREIGHT LINES Inc.
Winston-Salem, N.C.
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—demonstrated under heavy truck traffic on Virginia's Route 304

This seven mile section of State Highway 304 in Halifax County, Va., is further evidence of the rugged durability of hot-mix Texaco Asphaltic Concrete paving. Not only is this a heavily traveled highway, but a large proportion of its traffic consists of trucks such as that shown in the photo. Resilient, joint-free Asphalt absorbs this punishing impact year after year, summer and winter.

Maintenance records of many State Highway Departments confirm Asphalt's lower upkeep cost.

Another fact highway engineers cannot afford to overlook is that heavy-duty Asphalt paving costs substantially less than rigid paving of comparable design—$50,000 a mile less in the case of the New Jersey Turnpike, America's most heavily traveled toll road.

Helpful information on hot-mix Asphaltic Concrete and other types of Asphalt paving for highways, streets, airports and parking areas is supplied in the brochure, "Plant-mixed Texaco Asphalt Paving". Write our nearest office for a copy.

Photograph

This heavily traveled 7-mile section of State Highway 304 in Halifax County, Virginia is served by a 2-course pavement of hot-mix Texaco Asphaltic Concrete.

Contractor: Thompson-Arthur Paving Company, Danville, Virginia.

TEXACO INC., Asphalt Sales Div., 135 E. 42nd Street, New York 17

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